nervules. *Cilia* black, on the hindwing white from the second median nervule to the anal angle. *Hindwing* with the anal lobe marked with a small ochreous spot. UNDERSIDE, *both wings* greenish-ochreous. *Forewing* with two short brownish lines at the end of the cell; a regularly-curved narrow brown discal band from the costa to the submedian nervure. *Hindwing* with the disco-cellular lines as in the forewing, the discal band also, but outwardly very irregular, finely defined with white; a similar short oblique band on the middle of the abdominal margin; a round black spot on the margin in the first median interspace faintly crowned with ochreous; the anal lobe black, the space beyond sprinkled with black and white; fine anteciliary black and white lines becoming obsolete anteriorly; *tail* long, black, tipped with white. FEMALE. UPPERSIDE, *both wings* dull purple, entirely lacking the rich deep purple gloss present in the male. UNDERSIDE, *both wings* bright ochreous, the markings as in the male."

"Described from several examples of both sexes obtained in Sylhet by the native collectors of the Rev. Walter A. Hamilton, also from two females taken by Colonel A. M. Lang, R. E., one at Naini Tal, 5,000 feet, on 29th September, the other at Nalaina, near Naini Tal, 4,200 feet, on 22nd September, 1887. The blue coloration of the upperside of the male is different from that of any species known to me; the 'male-mark' on the upperside of the forewing is also more prominent than in any other species of the genus and different in character; it is present in *R. orseis*, Hewitson, but is less distinct, and is altogether absent in *R. sphinx*, Fabricius." (*de Nicéville*, l. c.) Since the above was written I have received many specimens of both sexes of this species from Sylhet, the wings of one of them, a male, I have bleached. The "scale-mark" on the hindwing is larger than in any other species of the genus, higher than broad, nearly reaching the costal nervure, but occupies the same position as in the other species.

The figure of the male shewing both sides is given on Plate XXV, the figure of the femal also shewing both sides is given on Plate XXIX, drawn from the type specimens from Shillong in my collection.

993. **Rapala sphinx**, Fabricius.

Papilio sphinx, Fabricius, Syst. Ent., p. 520, n. 326 (1775); *Deudorix sphinx*, Butler, Cat. Fab. Lep. B. M., p. 180, n. 3 (1869); *D. varuna*, Hewitson (*nec* Horsfield), Ill. Diurn. Lep, *Lycænidæ*, p. 22, n. 16, pl. ix, figs. 32, 33, *male*, pl. x, figs. 36, 37, *female* (1863).

HABITAT: East Indies (*Fabricius*), Sylhet, Burma, Java.

EXPANSE: ♂, ♀, 1·5 to 1·7 inches.

DESCRIPTION: MALE. UPPERSIDE, *both wings* dark indigo-blue in some lights, most brilliant rich deep ultramarine-blue in other lights. *Forewing* with the costa narrowly, the apex widely and decreasingly to the anal angle where it ends in a point, black, this iridescent blue area a little more extensive than in *R. tara*, de Nicéville. *Hindwing* with the costa and outer margin narrowly black, the abdominal margin pale fuscous, the anal lobe black, inwardly with a patch of dull ochreous-ferruginous scales occupying nearly half the lobe. UNDERSIDE, *both wings* dull pale fuscous, with deep black markings; the disco-cellular nervules defined by two short lines; a somewhat broad straight even discal band, in the forewing not extending below the submedian nervure, where it is gently curved inwards, in the hindwing recurved to the abdominal margin; an indistinct submarginal somewhat macular fascia. *Hindwing* with a small orange spot on the margin in the first median interspace centred with black, the anal lobe deep black, with a linear orange bar above it, the space between the spot and the anal lobe slightly sprinkled with silvery scales. *Body* above and beneath, abdomen above concolorous with the wings, abdomen beneath bright ochreous. FEMALE. UPPERSIDE, *both wings* as in the male, but the blue shot not so brilliant or extensive. UNDERSIDE, *both wings* pale ochreous-brown, all the markings dark brown. *Hindwing* with the lower portion of the discal band filled in with ferruginous; a fine anteciliary white line, obsolete anteriorly.

"The *D. varuna* of Horsfield [from Java], though allied to this species, seems to be quite distinct." (*Butler*, l. c.)

I am not quite sure of my identification of this species, as I have only Hewitson's figures to guide me, but in his figure of the male he so clearly endeavours to give the brilliant blue colour of the upperside, and shows the yellow abdomen on the underside, that I have not much doubt of the correctness of my determination. *R. sphinx* is by far the most beautiful species in the genus, and is now recorded from Indian limits for the first time. It appears to be fairly common in Rangoon in July, August, and September, and the Rev. Walter A. Hamilton has taken it in Sylhet.

994. **Rapala buxaria,** de N. (PLATE XXV, FIG 152 ♂).

R. buxaria, de Nicéville, Journ. A. S. B., vol. lvii, pt. 2, p. 285, n. 16, pl. xiv, fig. 13, *male* (1888).

HABITAT: Bhutan, Sikkim.

EXPANSE: ♂, 1·50 to 1·65 inches.

DESCRIPTION: "MALE. UPPERSIDE, *both wings* dark brown overlaid with a deep steel-blue gloss, in certain lights almost the whole surface shows a resplendent cærulean coloration of much the same shade as in *Rapala schistacea*, Moore, though of far greater extent. *Hindwing*, the anal lobe with an oval patch of deep vermilion scales, the abdominal margin pale brown and very hairy, *tail* black tipped with white. UNDERSIDE, *both wings* of a pale ochreous-brown colour, [sometimes glossed with purple.] *Forewing* with a pair of fine brown lines closing the discoidal cell; a very straight oblique discal line from the costa to the middle of the submedian interspace, this line is made up of two equal portions, inwardly of a pale brown portion, outwardly of a dark brown portion; a very indistinct submarginal fascia. *Hindwing* with a pair of very fine brown lines closing the discoidal cell; a very straight discal line as in the forewing from the costa to the first median nervule, from thence to abdominal margin forming a W-shaped figure; a submarginal fascia as in the forewing; anal lobe black crowned with whitish, inwardly marked with an orange line; a round black spot crowned with ochreous on the margin in the first median interspace, the wing-surface between it and the anal lobe sprinkled with black and white scales, a fine black marginal thread. *Cilia* reddish-brown throughout. *Body* concolorous with the wings above, pale yellow below. *Head* with the frontal tuft and *palpi* pale yellow."

"Apparently nearest to *Rapala nissa*, Kollar, with which it closely agrees in the coloration and markings of the underside, though the discal line is straighter and more even than is usually the case in that species. It differs, however, from *R. nissa* on the upperside in having the rich iridescent blue reflections which are only seen in certain lights, these being entirely absent in *R. nissa*."

"Described from a single specimen taken in Bhutan in April, in the collection of Mr. A. V. Knyvett." (*de Nicéville*, l. c.)

Mr. Otto Moller has, since this description was written, obtained this species at Tongloo, Sikkim, 10,000 feet. I have also received several males from various parts of Sikkim, where it does not appear to be very uncommon. The female is unknown, and will probably be difficult to recognise.

The figure shews both sides of the type male specimen from Bhutan in the collection of Mr. A. V. Knyvett.

995. **Rapala schistacea,** Moore.

Deudorix schistacea, Moore, Proc. Zool. Soc. Lond., 1879, p. 140; *Rapala schistacea*, de Nicéville, Journ. A. S. B., vol. liv, pt. 2, p. 48, n. 8. (1885); id., Doherty, Journ. A. S. B., vol. lv, pt. 2 p. 126, n. 169 (1886); *Deudorix varuna*, Wood-Mason and de Nicéville (*nec* Horsfield), Journ. A. S. B., vol. xlix, pt. 2, p. 234, n. 51 (1880).

HABITAT: Himalayas, N.-W. Provinces, Bengal, Assam, Orissa, Ganjam, Nilgiris, Ceylon, Andaman Isles.

EXPANSE: ♂, ♀, 1·15 to 1·50 inches.

DESCRIPTION: "MALE. UPPERSIDE, *both wings* dark slaty-blue, [the lower discal area of the forewing and the disc of the hindwing shot with brilliant blue in some lights. *Hindwing* with the abdominal margin pale fuscous, the anal lobe black, bearing inwardly a patch of dull ochreous scales, with a patch of long white hairs above the lobe, and a fine anteciliary white line, obsolete anteriorly]. UNDERSIDE, *both wings* buff-grey, crossed by a narrow discal band of two white lunular lines [filled in with dark brown], and a cell-streak; [an indistinct submarginal fascia]. *Hindwing* with a black anal spot bordered above with white, and another beyond [in the first median interspace] bordered with ochreous, [the space between these spots irrorated with greenish metallic scales, with a narrow band of the same colour above the anal lobe]. FEMALE. UPPERSIDE, *both wings* purple-blue, borders slightly purple-brown." [Otherwise as in the male, but of course lacking the blue gloss].

"Allied to *D.* [= *R.*] *varuna*, [Horsfield, a Javan species]. May be distinguished by the blue colour of the male pervading the entire surface of the upperside" (*Moore*, l. c.) The latter remark is incorrect, the blue gloss does not nearly cover the entire surface.

"Very common throughout the year in Calcutta. I have bred the larva in the Spring from *Antidesma Gaesembilla*, Mull., a deciduous bush growing in the Botanical Gardens. The larva and pupa agree exactly with the figures of an undetermined species given in Horsfield and Moore's Cat. Lep. Ins. Mus. E. I. C., pl. xii, figs. 4, 4*a*, and which is probably *Rapala varuna*, Horsfield, a Javan species." (*de Nicéville*, l. c.) The larvæ are attended at all ages by a small black ant, *Cremastogaster* sp. The larva feeds on the just opening leaves, buds and flowers of the bush, and resembles them so closely as to be very difficult to find, though it is easily obtained by beating.

"Distinguished by the beautiful blue of the hindwing and the basal part of the forewing, when seen in certain lights, especially from behind." (*Doherty*, l. c.)

The rich, though restricted, blue gloss of the upperside of the males on both wings, and the narrow discal band on the underside of both wings, at once distinguish this species from *R. orseis*, Hewitson, which occurs in so many places with it. The females of *R. schistacea*, as far as I am aware, can only be distinguished from the same sex of *R. orseis* by the discal band on the underside of both wings being narrower and more regular It occurs on the lower outer ranges of the Himalayas as far west as Masuri at any rate, in Sikkim it is found in April, June, and October, Colonel A. M. Lang has sent me a specimen taken at Bareilly in the North Western Provinces in December, it is common at Bholahât in the Malda district, in Calcutta, probably occurs throughout Assam, and is found in Orissa and southwards to the Nilgiris, and again in the Andaman Isles. In the Indian Museum, Calcutta, is an undoubted specimen from Ceylon, which is a new locality for it.

996. **Rapala lankana**, Moore.

Deudorix lankana, Moore, Proc. Zool. Soc Lond., 1879, p. 141; idem, id., Lep. Cey., vol. i, p. 103, pl. xxxix, fig. 5, *female* (1881); *Vadebra lankana*, id., Proc. Zool. Soc. Lond., 1883, p. 528.

HABITAT: North Kanara, Nilgiris, Ceylon.

EXPANSE: ♂, ♀, 1·5 to 1·6 inches.

DESCRIPTION: MALE. UPPERSIDE, *both wings* deep purple, almost dull black, but in certain lights the whole of the hindwing and the lower discal area of the forewing glossed with magnificent rich purple. *Hindwing* with the anal lobe centred with ferruginous. UNDERSIDE, *both wings* pale ferruginous towards the base, becoming gradually darker towards the margin. *Forewing* with a somewhat broad straight discal deep ferruginous band from the costa almost reaching the submedian nervure, its outer edge very even, its inner edge a little irregular. *Hindwing* with a similar discal band, but posteriorly curved up to the abdominal margin; the anal lobe black, a deep ferruginous spot in the first median interpace on the margin, with some indistinct white speckles between, the discal band also bordered with white on both sides above the anal lobe. "**FEMALE.** UPPERSIDE, *both wings* pale violet-brown, marginal line black. *Cilia* pale ferruginous, at anal angle of hindwing and beyond the tail white. *Hindwing* with the anal lobe ferruginous, *tail* black. UNDERSIDE, *both wings* pale ferruginous, the margin darker; crossed by a narrow ferruginous-brown discal band. *Hindwing* with a black spot at the anal lobe and a speckled spot beyond, both of which and the end of the band are bordered with white speckles. *Legs* blackish, banded with white." (*Moore*, l. c.)

I have seen males only of this species. It is very rare. Mr. Hugh Wise has taken it in North Kanara in June and July, Mr. G. F. Hampson has met with it on the southern slopes of the Nilgiris at 3,500 feet in April, and in Ceylon the type was taken by Captain Wade on the edge of high jungle in the Kottawah forest, near Galle.

997. **Rapala scintilla,** n. sp.

HABITAT: Sikkim.

EXPANSE: ♂, 1·4 to 1·6 inches.

DESCRIPTION: MALE. UPPERSIDE, *both wings* very dark indigo-blue. *Hindwing* with a patch of most magnificent iridescent blue on the disc beyond the end of the discoidal cell not quite reaching the outer margin, bounded posteriorly by the first median nervule, anteriorly extending just above the second subcostal nervule; inner margin pale fuscous heavily clothed with long fuscous setæ; anal lobe bearing a very small orange spot. UNDERSIDE, *both wings* greenish-grey; two fine darker grey lines defining the disco-cellular nervules; a similar discal line, outwardly bounded with a fine white line, slightly outwardly curved in theforewing, extending from the costa to the submedian fold, more curved and somewhat irregular in the hindwing, recurved to the abdominal margin; an obscure submarginal band. *Hindwing* with a large black spot crowned with a fine white line on the anal lobe, a smaller similar spot crowned with a fine orange line in the first median interspace, the space between these two spots sprinkled with black and white scales; a very fine anteciliary black line; *cilia* grey; *tail* black, tipped with white. FEMALE unknown.

R. scintilla in the male may at once be distinguished from *R. schistacea*, Moore, by the absence of the blue gloss on the forewing; from *R. orseis*, Hewitson, it may be known by the presence of the blue gloss on the hindwing. *R. scintilla* therefore appears to occupy a position exactly intermediate between these two species. The greenish-grey shade of the underside is also distinctive.

Described from six examples in Mr. A. V. Knyvett's collection and my own.

998. **Rapala orseis,** Hewitson.

Deudorix orseis, Hewitson, Ill. Diurn Lep., p 23, n 20 (1863); id., Moore, Proc Zool. Soc. Lond., 1877, p. 589; id, Wood-Mason and de Nicéville, Journ. A. S. B., vol. xlix, pt 2, p. 234, n. 50 (1880); *Rapala orseis*, de Nicéville, Journ. A. S B., vol. liv, pt. 2, p. 48, n. 85 (1885); id., Moore, Journ. Linn. Soc. Lond., Zoology, vol. xxi, p. 43 (1886).

HABITAT: Sumatra (*Hewitson*), Singapore, Kamorta, Mergui (*Moore*), Malda, Sikkim, Calcutta, Orissa, Nilgiris, Bombay, Andaman Isles, Assam, Burma.

EXPANSE: ♂, 1·1 to 1·4; ♀, 1·3 to 1·5 inches.

DESCRIPTION: "MALE. UPPERSIDE, *both wings* dark brown, glossed with dull indigo-blue. *Forewing* with the *apex rounded*. *Hindwing* tailed, the anal lobe black, with a spot of orange-yellow. UNDERSIDE, *both wings* rufous-brown, *glossed with purple*, a large spot at the end of the cell, a transverse rufous-brown band beyond the middle (not continuous where the wings meet), nearly straight and equal on the forewing, broad and slightly broken on the hindwing and bordered on both sides with white. *Hindwing* with the caudal spot (which is crowned with orange) and the lobe black, the space between them irrorated with silvery-white, a submarginal line of white, the margin black." (*Hewitson*, l. c.) "FEMALE. UPPERSIDE, *both wings* lighter than in the male, with a distinct purple gloss which has a light steel-bluish tint at the base. UNDERSIDE, *both wings* lighter, with all the markings more distinct." (*Wood-Mason* and *de Nicéville*, l. c.)

"A single male specimen was taken by me in Calcutta in April on the flowers of *Diospyros montana*, and Major Sage took another male in December. *R. lazulina*, Moore, from Ceylon, is very closely allied to this species, but unlike Calcutta specimens is not glossed with purple on the underside, which Hewitson gives as a distinguishing character of his *R. orseis*." (*de Nicéville*, l. c.)

Mr. Otto Moller possesses numerous specimens of both sexes of this species taken in Sikkim. The male has usually a more or less prominent round space at and beyond the end of the cell of the forewing on the upperside devoid of the deep steel-blue gloss, with the veins which cross it pale. The discal band of the underside is always broader than in *R. schistacea*, Moore, and in some specimens is very broad and amalgamated with the band closing the discoidal cell of both wings in the male: it is variable also in the female, but the broadest banded specimens from Sikkim that I have seen have the discal and disco-cellular bands separated on the forewing, but run into one another on the hindwing. In Sikkim it occurs in June, November, and December. Mr. Moore has recorded this species from Kamorta in the Nicobars, but no specimen has been received from there since. It is, however, common in the Andamans. As will be seen from the localities given above, *R. orseis* has a wide range, which would be further extended if the habitats of the two species which follow were added, as I think they ought to be; neither of them being, in my opinion, distinct species.

999. **Rapala grisea**, Moore.

Deudorix grisea, Moore, Proc. Zool. Soc. Lond., 1879, p. 140; *Rapala grisea*, id., l. c., 1882, p. 251; id., Doherty, Journ. A. S. B., vol. lv, pt. 2, p. 127, n. 130 (1886).

HABITAT: Deyra Doon, Kangra district, N.-W. Himalayas (*Moore*); Kapkot, Bagheswar, Khati, 3-7,000 feet, Kumaon (*Doherty*).

EXPANSE: ♂, 1·5; ♀, 1·6 inches.

DESCRIPTION: "MALE. UPPERSIDE, *both wings* dull greyish-blue, outer border dusky black. UNDERSIDE, *both wings* dull lavender-grey, crossed by a broad darker band bordered by a pale lunular line, and a cell-streak. *Hindwing* with the anal spots black, the outer spot ochreous-bordered above. FEMALE. UPPERSIDE, *both wings* pale greyish-blue, border dusky brown."

"Allied to *D.* [=*R.*] *schistacea*, Moore" (*Moore*, l. c.)

"This species, which has the transverse band below broader than in *R. schistacea*, and the wings above dull steel-blue in all lights without the brilliant cyaneous reflections of that species, has been identified by Mr. de Nicéville as *R. orseis*, Hewitson (from Sumatra), and so named by him in his lists of the butterflies of Sikkim, Calcutta, and the Andaman Isles."

"An aberrant male and female from Jhulaghat on the western border of Nepal differ in the extreme width of the transverse band below, which is very dark, and on both wings of the male, and less perfectly in the hindwing of the female, is united with the dark disco-cellular band. I prefer not to separate this form from *R. grisea*, though it is perhaps distinct." (*Doherty*, l. c.)

The variety which Mr. Doherty describes above is one which occurs very commonly in *R. orseis*, Hewitson, and is without doubt of no specific value.

There is a single female specimen in the Indian Meseum, Calcutta, from Mr. Hocking's Kangra collection, which Mr. Moore identifies as this species. It is quite indistinguishable from other specimens he has identified as *R. orseis*, and I have but little doubt that the name should be sunk as a synonym of that species.

1000. **Rapala lazulina**, Moore.

Deudorix lazulina, Moore, Proc. Zool. Soc. Lond., 1879, p. 140; *Rapala lazulina*, id., Lep. Cey., vol. i, p. 105, pl. xl, figs. 3, 3*a*, *male* (1881).

HABITAT: Ceylon (*Moore*), Nilgiris (*Hampson*).

EXPANSE: ♂, ♀, 1·25 inches.

DESCRIPTION : "MALE. UPPERSIDE, *both wings* dull dark lazuline-blue, outer borders black. *Hindwing* with the abdominal margin grey, the anal lobe black. UNDERSIDE, *both wings* brownish-grey. *Forewing* crossed by a discal band of two narrow white lunular lines, and a short streak at the end of the cell. *Hindwing* crossed by similar irregular bands, the discal band bent upwards to the middle of the anal margin ; a black spot bordered above with ochreous at the anal angle, and another beyond. FEMALE. UPPERSIDE, *both wings* purple-grey. UNDERSIDE, *both wings* ochreous-grey ; marked as in the male."

"Allied to the Javan *D.* [=*R.*] *varuna*, Horsfield, and to *D. orseis*, Hewitson, from Singapore." (*Moore*, l. c. in Proc. Zool Soc. Lond.)

"Not uncommon on the lower slopes of the Nilgiris" (*G. F. Hampson.*)

I can find no character by which to separate this species satisfactorily from *R. orseis*. Typically the latter is glossed with purple on the underside, but this is not a specific character, and very many specimens of *R. orseis* undoubtedly lack this feature, especially females. It would be more satisfactory in describing such species as this if Mr. Moore would say how they differ from their nearest allies, the bald statement that they are allied being hardly any help to correct discrimination.

1001. **Rapala rosacea,** de N. (PLATE XXV, FIG. 151 ♂).

R. rosacea, de Nicéville, Journ. A S B., vol. lvii, pt. 2, p. 285, n. 15, pl. xiv, fig. 12, *male* (1888).

HABITAT : Sikkim, Khasi Hills.

EXPANSE : ♂, 1·16 to 1·56 ; ♀, 1·40 to 1·52 inches.

DESCRIPTION : "MALE. UPPERSIDE, *both wings* fuscous. *Forewing* glossed with shining deep steely-purple from the base to beyond the middle. *Hindwing* with all but the costa, outer margin narrowly, and abdominal margin broadly glossed with shining deep steely-purple. UNDERSIDE, *both wings* vinous-red, in some specimens the red colour somewhat obsolescent. *Forewing* with two short dark lines at the end of the cell, a discal very even slightly curved narrow dark band from the costa to the submedian fold, a submarginal obscure fascia. *Hindwing* with the disco-cellular and discal markings as in the forewing, but the latter at its posterior end assuming a W-shaped figure, the whole band outwardly narrowly defined with white, at its posterior end also inwardly defined with white, the anal lobe marked with red in the middle, a red spot on the margin beyond the base of the tail, between which the wing is irrorated with grey scales, a narrow red line running up from the anal lobe to the abdominal margin below the discal line. *Cilia* reddish-brown throughout. *Tail* black, tipped with white. FEMALE coloured and marked exactly like the male, but of course lacking the male secondary sexual characters."

"Mr. Otto Moller possesses five males and six females of this distinct species, all taken in Sikkim in March. The reddish-vinous coloration of the underside at once distinguishes it from all the species of the genus known to me." (*de Nicéville*, l. c.) The Rev. Walter A. Hamilton has obtained several specimens of this species in the Khasi Hills in the Spring. It is just possible that *R. rosacea* may be a seasonal (Spring) form of *R. nissa*, Kollar, occurring in Sikkim and the Khasias, though I have seen no specimens connecting the two species.

The figure shews both sides of a male specimen from Sikkim in my collection.

1002. **Rapala nissa,** Kollar.

Thecla nissa, Kollar, Hügel's Kaschmir, vol. iv, pt. 2, p 412, n. 2, pl. iv, figs. 3, 4 (1848) ; *Amblypodia nissa*, Horsfield and Moore, Cat. Lep. Mus E I C., vol. i, p 46, n 73 (1857) ; *Dendorix nissa*, var (part), Hewitson, Ill. Diurn. Lep., p. 23, n 19, pl x, figs 42, 43, *male* (*nec* 44) (1863) ; *Bidaspa nissa*, Moore, Proc. Zool. Soc. Lond , 1882, p. 250 ; id , Doherty, Journ A S. B., vol. lv, pt. 2, p. 126, n. 128 (1886) ; *Rapala nissa*, Butler, Proc. Zool. Soc. Lond., 1886, p. 370, n. 56.

HABITAT : Himalayas, Assam, Sumatra.

EXPANSE : ♂, ♀, 1·3 to 1·8 inches.

DESCRIPTION : "UPPERSIDE, *both wings* fuscous irrorated with violet. *Hindwing* with one tail, with a brown ocellus sprinkled with white at the anal angle. UNDERSIDE, *both wings* yellowish-grey, with a slender darker line, posteriorly undulated. *Hindwing* with two black ocelli, the second marked with red." (*Kollar*, l. c.)

MALE. UPPERSIDE, *both wings* shining bluish-purple or deep steel-blue, variable in shade. *Forewing* with the costa, apex and outer margin purplish-black, sometimes without any other marks, sometimes with a small orange patch beyond the cell, sometimes with a patch nearly as large as in *Hysudra selira*, Moore. *Hindwing* with the costal margin pale, the abdominal margin fuscous, the anal lobe black, with a patch of ferruginous scales near the middle. UNDERSIDE, *both wings* with the ground-colour somewhat variable in tone, sometimes pale brown, sometimes ochreous-brown. *Forewing* with two fine dark lines defining the disco-cellular nervules; a very straight, even, decreasing discal band from the costa almost to the submedian nervure, outwardly finely defined with white; an obscure submarginal fascia. *Hindwing* with similar markings, but the discal band recurved to the abdominal margin, where it is defined on both sides with white; anal lobe black, submedian interspace on the margin also black, but heavily sprinkled with whitish scales, a black spot crowned with orange in the first median interspace. FEMALE. UPPERSIDE, *both wings* rather duller in shade, otherwise similar to the male.

"A variable species. The male is sometimes, as in Kollar's figure, without the red spot on the middle of the forewing; sometimes it is more distinctly marked than in the figure 42 of the plate. In colour it differs from other allied species, and, like the females of *R. varuna*, Horsfield, and *R. pheretima*, Hewitson, [a Bornean species], is of a dull grey- or indigo-blue. On the underside the transverse band is far apart where the wings meet." (*Hewitson*, l. c.)

In Sikkim, as elsewhere, this is a very variable species, some specimens of both sexes showing no trace of the discal orange spot on the upperside of the forewing, others having it quite small, while others again have it very large. It occurs in Sikkim in March, April, May, August, September, and October.

Mr. Doherty (l. c.) remarks:—"Kumaon specimens rarely show any trace of the red spot above, and are of a richer metallic above and a deeper rufous below than Simla specimens. The genus [*Bidaspa*] seems very close to *Rapala*." Colonel Lang writes of this species:—"Scarce or local at Naini Tal, a few taken in May, July, and September, 4,000 to 6,500 feet. Generally shot with steely-blue without any patch, but one or two with a dull fulvescent patch."

R. nissa is probably confined to mountainous districts, and where it occurs is by no means rare. It has so far not been recorded from the Malay Peninsula, but the hill ranges in that region have been very slightly explored entomologically. I possess two specimens from Sumatra which only differ from Indian examples in the discal band on the underside of both wings being filled in with ochreous. Mr. Butler evidently does not admit the generic distinctness of *Bidaspa*, as in 1886 he quite correctly places this species in the genus *Rapala*.

1003. **Rapala rectivitta**, Moore.

Deudorix rectivitta, Moore, Proc. Zool. Soc. Lond., 1879, p. 141.

HABITAT: N. Cachar.

EXPANSE: ♂, 1·5 inches.

DESCRIPTION: "MALE. UPPERSIDE, *both wings* dark dusky blue borders black. UNDERSIDE, *both wings* pale vinous brownish-buff, crossed by a straight narrow tapering dark brown pale-outer-bordered band, a paler cell-streak, and an indistinct brownish submarginal fascia; the band on the *hindwing* bent and zigzag above the anal angle; a small black anal and subanal spot speckled ochreous and white, a few speckles also between them."

"Nearest allied to *D.* [=*R.*] *nissa*, Kollar, from the N.-W. Himalayas." (*Moore*, l. c.)

I have not seen this species. In many respects the description agrees with my *R. tara*, but the anal lobe and black spot beyond in that species are not "speckled ochreous and white," being entirely jet black. The description also answers to *R. nissa* except the character given above as distinguishing it from *R. tara*.

1004. **Rapala petosiris**, Hewitson.

Deudorix petosiris, Hewitson, Ill. Diurn. Lep., p. 22, n. 13, pl. ix, figs. 30, 31, *male* (1863). *Vadebra petosiris*, Moore, Proc. Zool. Soc. Lond., 1883, p. 528. *V. pheretima*, Moore (*nec* Hewitson), Journ. Linn. Soc. Lond., Zoology, vol. xxi, p. 43 (1886).

HABITAT: East India (*Hewitson*), Sikkim, Cachar, Sylhet, Orissa, Burma.

EXPANSE: ♂, ♀, 1·4 to 1·8 inches.

DESCRIPTION: "MALE. UPPERSIDE, *both wings* rufous. *Forewing* with the costal margin and apex broadly brown. *Hindwing* tailed. UNDERSIDE, *both wings* with two rufous-brown spots before the middle, crossed beyond the middle by a nearly straight rufous-brown band, and by an indistinct submarginal band of the same colour. *Hindwing* with the caudal spot and anal lobe dark brown, a submarginal white line near the tails. FEMALE. UPPERSIDE, *both wings* brown, slightly glossed with dull blue. UNDERSIDE, *hindwing* differs from the male only in having the transverse band bordered below and near the inner margin on both sides with white." (*Hewitson*, l. c.)

In the male on the upperside the forewing is rufous, with the costa broadly, the apex still more broadly, the outer margin decreasingly (terminating in a point at the anal angle), black. Hindwing entirely rufous except the costal and abdominal margins which are pale fuscous, and a narrow black anteciliary thread; the anal lobe rufous-ochreous, with a fine outer white line reaching the base of the tail, the latter is black tipped with white. The underside of both wings is brown. Forewing with a blackish spot crossing the discoidal cell at its middle, two fine lines on the disco-cellular nervules, a gently curved discal line from the costa almost to the submedian nervure, and an indistinct submarginal fascia. Hindwing with a rounded spot placed on the raised glandular patch below the costa (in the male only of course, this spot being invariably absent in the female), two narrow disco-cellular lines, a discal irregular fascia posteriorly curved upwards to the abdominal margin, where it is defined with a very narrow white line on both sides, an obscure ochreous submarginal rather broad fascia, anal lobe jet black, a small black spot on the margin in the first median interspace, with a few scattered silvery scales between it and the anal lobe, and continued to the abdominal margin above the lobe. The female on the upperside is glossed with dull steel-blue, which colour merges into the blackish outer margins of the wings.

R. petosiris is a fairly common species at low elevations in Sikkim; Mr. Otto Moller possesses specimens caught in August, October, November, and December. It occurs rarely in the hills of Orissa, also throughout Assam and in Burma. It is a very variable species, in specimens from a single locality such as Sikkim I find that the basal spots on the underside of both wings in both sexes are often entirely wanting, and that they are sometimes present though very small.

Three other species of this group have been recorded from the Malay Peninsula. *R. pheretima*, Hewitson, may be known from its near ally *R. petosiris*, Hewitson, by the male on the upperside having the rufous colour much restricted, confined to the disc of both wings, leaving all the margins broadly black. Mr. Moore has recorded this species from the Mergui Archipelago, but the specimens are now before me, and are quite typical *R. petosiris*, which is very distinct from typical *R. pheretima*. The latter is typically a Bornean species, but a slight variety of it was described by Hewitson from Singapore. Mr. Moore also gives Tounghoo, Burma, as another locality for it. *R. sequeira*, Distant, and *R. utimutis*, Distant, may perhaps be known from *R. petosiris*, the former by having the discal band on the underside of the hindwing strongly dislocated, the band on the forewing more curved; the latter by having the discal band of the forewing sinuous, much bowed outwardly in the middle and reaching the submedian nervure, very broad and prominent on the hindwing. As the spots on the underside are so variable in *R. petosiris*, I do not think they will prove of much specific value in other species of this group of the genus. A description of all these species is appended.*

1005. **Rapala suffusa**, Moore.

Deudorix suffusa, Moore, Proc. Zool. Soc. Lond., 1878, p. 834, pl. lii, fig. 8, *male*; *Vadebra suffusa*, id., l. c., 1883, p. 528.

HABITAT: Sylhet, Burma.

EXPANSE: ♂, ♀, 1·35 to 1·45 inches.

DESCRIPTION: MALE. UPPERSIDE, *both wings* dull coppery-brown, much as in the male of the common *Rapala petosiris*, Hewitson, but a little paler. *Forewing* beautifully suffused in certain lights with rich purple, especially on the black portions of the wing; the costa and outer margin about equally broadly, the apex still more broadly black, the inner edge of the outer black border irregular, projected inwards in the submedian interspace and below the submedian nervure; the veins crossing the coppery-brown area narrowly black. *Hindwing* with the base a little dusky, the abdominal margin interiorly pale, outwardly dusky, a fine black anteciliary thread, the anal lobe black, the middle occupied by a clump of dull chrome-yellow scales. UNDERSIDE, *both wings* dull chrome-yellow. *Forewing* with the disco-cellular nervules faintly defined on both sides by a pale brown fine line, a discal inconspicuous curved fine pale brown line from near the costa to near the submedian nervure. *Hindwing* with a similar line but springing from the costa, at its lower end recurved to the abdominal margin, where it is finely bordered on both sides with white; a small round black spot on the margin in the first median interspace, the anal lobe black, an anteciliary fine black line at the anal angle, becoming brown above the black spot and so continued to the apex of the forewing. FEMALE. UPPERSIDE, *both wings* somewhat shining fuscous much as in the same sex of the common *Deudorix epijarbas*, Moore. *Forewing* with the apex and outer margin of a more saturated tint. UNDERSIDE, *both wings* of a clearer yellow than in the male, all the markings, the black spot and anal lobe on the hindwing, less prominent.

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* *Rapala pheretima*, Hewitson. *Deudorix pheretima*, Hewitson, Ill Diurn Lep., p. 21, n. 12, pl. ix, figs. 28, 29, *male*; 27, *female* (1863); *Vadebra pheretima*, Moore, Proc. Zool. Soc. Lond., 1883, p. 528. HABITAT: Singapore; Sumatra; Sarawak, Borneo. EXPANSE: 1·7 inches DESCRIPTION: "MALE. UPPERSIDE, *both wings* rufous-brown, the middle rufous. *Hindwing* tailed. UNDERSIDE, *both wings* rufous-brown, crossed beyond the middle by a band of brown, slightly undulated on the forewing and bordered *outwardly with white*, broken into spots on the hindwing and bordered on *both sides with white*; with an indistinct band of brown near the outer margin. *Forewing* with two large spots before the middle. *Hindwing* with two or three spots; the caudal spot, the lobe, and a large spot between them, which is irrorated with silvery blue, all black; a silver spot above the lobe. FEMALE. UPPERSIDE, *both wings* rufous-brown, glossed with blue. UNDERSIDE does not differ from the male, except that the spots of the *hindwing* are smaller and of a somewhat different form."

"Variety from Singapore. MALE. UNDERSIDE, *both wings* with the transverse band narrower, straighter, the spot nearest the costal margin of the *hindwing* linear." (*Hewitson*, l. c.)

With regard to this last paragraph, if the specimen described has the rufous colouring confined to a discal patch on the upperside of both wings it is abundantly distinct from *R. petosiris*. The species has not been included by Mr. Distant in his "Rhopalocera Malayana." It has been recorded as stated above from Burma, but I think erroneously.

Rapala sequeira, Distant. *Deudorix sequeira*, Distant, Rhop. Malay., p. 278, n. 2, pl. xxiii, fig. 21, *female* (1885); *D. petosiris*, Butler (*nec* Hewitson), Trans. Linn. Soc. Lond, Zoology, second series, vol i, p. 549, n. 1 (1877). HABITAT: Malacca. EXPANSE: *Female*, 1·5 inches DESCRIPTION: "FEMALE. UPPERSIDE, *both wings* violaceous-blue, the margins obscurely fuscous. *Hindwing* with a black spot on the anal lobe UNDERSIDE, *both wings* pale brownish *Forewing* with a disco-cellular fascia outwardly margined with greyish at the end of the cell; a narrow waved dark fascia outwardly margined with greyish between the end of the cell and the outer margin, and a fuscous marginal and submarginal fascia. *Hindwing* with a transverse dark fascia bordered with greyish at the end of the cell; a narrow and strongly dislocated fascia outwardly bordered with greyish (dislocated at the nervules from the costa to the second median nervule and then continuous and broader to the abdominal margin) crossing the wing between the end of the cell and the posterior margin, a marginal and submarginal fascia as on the forewing, a black marginal spot surrounded with greenish scales between the second and first median nervules, a patch of greenish scales between the first median nervule and the submedian nervure, a black spot on the anal lobe, and two small fuscous spots beneath the costal nervure"

"The female specimen captured in Malacca by Capt. Pinwill, and presented to the British Museum, was identified in error by Mr. Butler as *D. petosiris*, Hewitson; a species, however, from which *D. sequeira* differs by the distinct markings on the underside of the wings, such as the absence of the transverse spot in the cell of the forewing [this spot is often absent in true *R. petosiris*], and by the strongly dislocated transverse fascia to the hindwing, &c The male has still to be discovered, and will doubtless prove to have the wings above of some shade of rufous-brown My collection contains a Burmese example of the true *D petosiris*, which perfectly agrees with Hewitson's figure" (*Distant*, l. c.) This last note is interesting, as it confirms my own opinion that *R. petosiris* occurs typically in Burma.

Rapala utimutis, Distant. *Deudorix utimutis*, Distant, Rhop. Malay., p 279 n. 3, pl xxiii, fig. 22, *male* (1885), *D. pheretima*, Butler (*nec* Hewitson), Trans. Linn Soc. Lond.. second series, Zoology, vol. i, p. 549, n. 2 (1877). HABITAT: Penang Malacca. EXPANSE: *Male* and *female*, 1·6 inches. DESCRIPTION: "MALE. UPPERSIDE, *both wings* dark rufous [It is strange that this species should not have an outer black border more or less wide as in *R. petosiris* and *R. pheretima*] *Hindwing* with a black spot on the anal lobe. UNDERSIDE, *both wings* pale brownish, with a transverse dark brown spot margined with greyish, in and at the end of the discoidal cells of both wings; followed between the ends of the cells and the outer margins by a narrow transverse dark brown fascia outwardly margined with greyish, which on the hindwing is strongly dislocated and sinuated from the third median nervule to the abdominal margin, where it is considerably widened, an obscure submarginal fascia to both wings, and three marginal spots to the hindwing near the anal angle, the first and third black, and the middle one composed of greenish scales; extreme outer margin narrowly paler, the *cilia* dark. FEMALE. UPPERSIDE, *both wings* pale bluish, the margins irregularly pale fuscous. UNDERSIDE, *both wings* as in the male."

"A male specimen in the British Museum captured by Capt Pinwill in Malacca, and a female Penang specimen in my own collection, are the materials which have induced the description of this species. Though Mr Butler included it in his list of the Malaccan butterflies as *D pheretima*, he now quite agrees with the writer as to its perfect distinctness from that species, as a reference to Hewitson's figure will testify. *D. pheretima*, Hewitson (a Bornean species), not only has the spots and fasciæ on the underside of the wings of a larger character than in *D. utimutis*, but also possesses a large spot above the cell of the hindwing." (*Distant*, l. c.) Before these two species of Mr. Distant's can be said to be firmly established as distinct from *D. pheretima*, it will probably be necessary to examine a much larger series of each than he had to deal with.

R. suffusa is nearest to *R. jarbas*, Fabricius,* from which the male differs on the upperside in the colour of the ground, in the black borders of the forewing being broader, especially at the anal angle, where the border is very broad, while in *R. jarbas* at the same part it is reduced to a point, in the anal lobe being also black with a clump of chrome-yellow scales in the middle, instead of ochreous-scarlet bearing outwardly a small black spot. The female is quite distinct from that of *R. jarbas*, but is very near to that of *R. xenophon*, from which it may perhaps be known by its brighter yellow colour on the underside, by the area between the black spot and anal lobe on the hindwing being hardly sprinkled with metallic-bluish scales, and by all the markings being obscure, almost obsolete, instead of prominent.

Described from two males and a female obtained by the Rev. Walter A. Hamilton in Sylhet, and another pair in the Phayre Museum, Rangoon, the male taken at Palone, Burma, in June, 1887, the female at Rangoon in January, 1887. I append Mr Moore's short original description of this species as a foot-note † I think it not at all improbable that the *Deudorix barthema* of Distant will prove to be a synonym of this rare species.

1006 **Rapala melampus**, Cramer.

Papilio melampus, Cramer, Pap Ex, vol. iv, p 142, pl ccclxii, figs G, H, *male* (1781); *Baspa melampus*, Moore, Proc Zool Soc. Lond 1882, p 250; id, Swinhoe Proc Zool. Soc. Lond, 1885, p. 135, n. 82; idem, id., l c., 1886, p 429, n 63, *Deudorix melampus*, Butler, Proc Zool Soc. Lond., 1883, p. 147, n. 10 *Thecla sorya*, Kollar, Hugel's Kaschmir, vol. iv, pt. 2 p 414 n 5, pl v, figs 1, 2, *male* (1848).

HABITAT: Coromandel Coast (*Cramer*); Ceylon, almost throughout India (except the desert tracts, Sikkim, Assam and Burma), Nias Island, Sumatra.

EXPANSE: ♂, ♀, 1·3 to 1·6 inches.

DESCRIPTION: MALE. UPPERSIDE, *both wings* scarlet. *Forewing* with the costa widely the apex broadly, and the outer margin decreasingly black, *the black border* on the outer margin *not ending in a point* as it does in *R jarbas*, Fabricius, being as much as one-twelfth of an inch in breadth at the anal angle; the veins black, *the median nervules and the outer portion of the median nervure not bordered with black* as in *R. jarbas*. *Hindwing* with the costa dusky, the abdominal margin pale, a fine anteciliary thread on the outer margin, *the anal lobe black, bearing anteriorly towards the abdominal margin a patch of ochreous scales, and outwardly a few scattered metallic greenish ones*; the anal lobe in *R. jarbas* being ochreous-scarlet, and bearing outwardly a small black spot, but no ochreous or green scales. UNDERSIDE, *both wings* pale purplish-brownish. *Forewing* with the inner margin paler, a double narrow darker line on either side of the disco-cellular nervules, a curved narrow discal line, almost reaching the costa, ending on the submedian nervure, outwardly defined with whitish; an obsolete macular submarginal fascia. *Hindwing* with the disco-cellular and discal markings as in the forewing, but the latter recurved to the abdominal margin, where it is inwardly defined by a fine white line; the anal lobe jet black, the round marginal spot in the first median interspace also jet black, and narrowly crowned with pale ochreous, the submedian interspace on the margin also black but thickly irrorated with greenish scales. Female. Upperside, *both wings* much duller, more brick red than in the male, especially on the *hindwing*, where the costa and outer margins are distinctly suffused with dusky. Underside, *both wings* as in the male.

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* I possess two male specimens of *R. jarbas*, Fabricius, from Sikkim which are distinctly fulvous instead of vermilion-red on the upperside, but they are obviously aberrations only

† "Allied to *Deudorix* [=*Rapala*] *xenophon*, Fabricius, male. MALE. Wings slightly broader. UPPERSIDE, *forewing* with a broader outer band, the red colour suffused with dusky brown. *Hindwing* also duller red, UNDERSIDE, *both wings* dull sulphur-yellow, transverse lunular line more curved *Hindwing* with the zig-zag end of the transverse lunular line at the anal angle black, and with an additional similar line above its end." (*Moore*, l. c.) The type specimens were taken by Mr. Ossian Limborg at Taoo, Upper Tenasserim, at 3-5,000 feet elevation.

A comparative description of this species has never before been given. As it is very near to *R. jarbas*, I have italicised those portions of the description of the male in which I have pointed out how it differs from that species. The females of the two species are easily distinguished, as in *R. jarbas* the upperside is entirely cupreous-brown, and in *R. melampus* dull red. Although Mr. Moore described the genus *Baspa* in which he places this species, he does not seem to have quite grasped its peculiarities, as he writes to me that the male has no secondary sexual characters, and has identified as *Nadisepa jarbas* a male of *Baspa melampus*, and as a male of *B. melampus* that which is clearly a female. The only authority for the species is Cramer's figure, in which the sinuosity of the costa of the forewing is shown in a somewhat exaggerated manner, and the inner margin as slightly dusky, which is not correct. In other respects the figure is a good one. Horsfield was led away by the inner margin of the forewing of Cramer's figure being shown dusky to place *melampus* as a synonym of *xenophon*, Fabricius, but in this he is clearly wrong, as the figure in question shows the hindwing to be entirely red at the base, while in *xenophon* it is broadly black.

R. melampus does not appear to be a common species anywhere. It occurs in the Western Himalayas on the lower outer ranges, but strangely enough not in Sikkim, where it is replaced by *R. jarbas*. It occurs almost throughout the plains of India, from Calcutta to Bombay and southwards to Travancore; and Mr. Fairlie obtained a single male in July at Jaffna in Ceylon, which is a new locality for it. It does not occur in the arid plains of Sind and Rajputana, nor, as far as I know, in Assam or Burma. Herr N. M. Kheil records it from Nias Island,* and Herr P. C. T. Snellen from Sumatra†.

1007. **Rapala jarbas**, Fabricius.

Papilio iarbus, Fabricius, Mant. Ins., vol. ii, p. 68, n. 648 (1787); *Hesperia jarbas*, id., Ent. Syst., vol. iii, pt. 1, p. 276, n. 65 (1793); *Papilio jarbas*, Donovan, Ins. Ind., pl. xl, fig. 3, *male* (1800); *Polyommatus jarbas*, Godart, Enc. Méth., vol. ix, p. 646, n. 108 (1823); *Thecla jarbas*, Horsfield, Cat. Lep. E. I. C., p. 93, n. 26, pl. iv, figs. 2, *larva*; 2a, *pupa*; 2 b-e, *structure of imago* (1829); *Nadisepa jarbas*, Moore, Proc. Zool. Soc. Lond., 1882, p. 249; idem, id., Journ. Linn. Soc. Lond., Zoology, vol. xxi, p. 43 (1886); *Deudorix jarbas*, Distant, Rhop. Malay., p. 278, n. 1, pl. xxiv, fig. 15, *male*; pl. xx, fig. 26, *female* (1885). *Dipsas melampus*, Horsfield and Moore (*nec* Cramer), Cat. Lep. Mus. E. I. C., vol. i, p. 32, n. 39, pl. i, figs. 2, *larva*; 2a, *pupa* (1857). *Deudorix melampus*, Butler, Cat. Fab. Lep. B. M., p. 181, n. 5 (1869).

Habitat: Siam (*Fabricius*), N.-W. Himalayas, Mergui (*Moore*), Sikkim, Bhutan, Assam, Burma, Malay Peninsula.

Expanse: ♂, ♀, 1·3 to 1·6 inches.

Description: "Male. Upperside, *both wings* brilliant reddish-brown, inclining to scarlet. *Forewing* with broad blackish-brown borders, more diffused towards the tip and the costal portion of the base, gradually diminishing in breadth towards the inner apical angle; medial nervures black and prominent. *Hindwing* narrow and lengthened, the ground-colour being uniformly diffused over the whole surface to a very narrow black marginal thread; anal appendage tipt externally with black, and surrounded, within the brown *cilia*, by a white thread extending also towards the tail. Underside, *both wings* satin-gray, with a faint glaucous cast, varying in intensity of tint in different individuals; on the disc stands a short oblong double streak consisting of two parallel grayish-brown lituræ with a medial and two lateral narrow white lines; between this and the posterior margin a more saturated brown band pervades both wings, being nearly regular until it reaches the anal region [of the hindwing], where, after a sudden flexure, it stretches directly across towards the internal margin, being bordered with a white striga exteriorly in the forewing and on both sides in the hindwing, the tint becoming more intense as the band approaches the anal region, having a bright silvery lustre in well-preserved specimens, the extreme anal angle is ornamented with two regularly round deep black ocellate spots, the exterior one being bordered internally with a brilliant orange lunule, the interior one, somewhat larger in size, covering the anal appendage, and being surrounded by a delicate white ring ciliated posteriorly, the intermediate space is occupied by a roundish group of greenish silvery atoms, bedded on a blackish patch, which sends off obliquely a narrow streak towards the inner margin. *Body* testaceous-brown above, gray underneath, and covered on both sides with delicate silky hairs; *antennæ* annulated, the club has a ferruginous tip; *tail* black with a whitish extremity. FEMALE. UPPERSIDE, *both wings* saturated testaceous with a slight cupreous lustre, the colour being uniformly diffused over the surface, increasing in strength towards the margins, but without defined borders."

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* Rhop. Ins. Nias, p. 33, n. 117 (1884).

† Midden-Sumatra, Lep., p. 21.

"*Thecla* [= *Rapala*] *jarbas* is at least one-fifth larger than [*R.*] *xenophon*, Fabricius, the longitudinal extent is also proportionally greater, and the general outline of the surface of the expanded insect is more regularly triangular, the ground colour of the upperside in the male, inclines to fulvous, the exterior and posterior borders alone are brown, and the latter decreases gradually in breadth to the inner apical angle; the hindwing is entirely without any black discoloration towards the base; in the female a saturated testaceous tint, with a slight cast of metallic yellow, extends uniformly over the surface, with a very gradual increase of strength towards the margins. Several minute peculiarities of the underside in each species have been detailed in the preceding descriptions, and here I have only to note the brilliant orange lunule over the exterior anal ocellus, which affords a permanent characteristic distinction of [*R.*] *jarbas*. In [*R.*] *xenophon* the forewing is slightly rounded at the external apical angle; the exterior margin has a very slight sinuosity, and the general contour is somewhat broader than in [*R.*] *jarbas*; the ground colour of both wings on the upperside [in *R. xenophon*] is more saturated, with less of a fulvous shade, the forewing is enclosed with borders on all sides, the interior, as well as the exterior and posterior border is dark brown; the borders generally are broader, have a deeper tint, and the exterior costal projection is more prominent; the hindwing has a large black spot in the middle of the exterior margin, extending to the base, and gradually diffusing itself over the veins; on the underside the exterior ocellus is comparatively small, obsolete, oblong, or irregularly defined, bedded in a circular ring of the marginal band, but never provided interiorly with a fulvous arch: the female has above an uniform deep blackish brown colour without any yellowish shade." (*Horsfield*, l. c.)

LARVA ochreous, considerably marked with black, ornamented with a subdorsal and a lateral series of tubercles bearing thick brushes of short black bristly hairs; the head conspicuous, all the segments of nearly equal width, the larva flattened, the constrictions between the segments not very prominent. PUPA brownish-ochreous sprinkled with black dots, smooth, naked, of the usual lycænid shape, the head rounded, the thorax slightly humped in the middle, the abdomen ending in a sharp point. These descriptions are drawn up from Dr. Horsfield's figures of the transformations of this species as exhibited in Java, and given in the Cat. Lep. Mus. E. I. C.

"*Papilio* [*Rapala*] *jarbas* differs from the typical *P.* [*R.*] *melampus*, Cramer, in having blackened veins to the forewing; Donovan's figure is not characteristic." (*Butler*, l. c.)

Mr. Moore records this species from the N.-W. Himalayas. This is almost certainly incorrect, no specimen from that region having been seen by me; if correct, it is the only locality where *R. jarbas* and *R. melampus* occur together. *R. jarbas* is found commonly in Sikkim, both in the lower hills and in the Tarai, Mr. Otto Moller possessing specimens taken in July, October to December. It occurs apparently throughout Assam, and thence southwards through Burma to Singapore and again in Java, and is a common species where met with.

1008. **Rapala xenophon,** Fabricius.

Hesperia xenophon, Fabricius, Ent. Syst., vol. iii, pt. 1, p. 272, n. 47 (1793); *Polyommatus xenophon*, Godart, Enc Méth., vol ix, p. 640, n. 85 (1823); *Thecla xenophon*, Horsfield, Cat. Lep. E. I. C., p. 94, n. 27 (1829); *Dipsas xenophon*, Horsfield and Moore, Cat. Lep. Mus. E. I. C., vol. i, p. 31, n. 38, pl. 1, figs. 3, *larva*; 3*a*, *pupa* (1857), *Nadisepa xenophon*, Moore, Journ. Linn. Soc. Lond., Zoology, vol. xxi, p 43 (1885); *Deudorix xenophon*, Distant, Rhop. Malay., p. 465, n. 7, pl. xliv, figs. 1, *male*; 2, *female* (1886); *D. diencces*, Hewitson, (male only), Ill. Diurn. Lep., Suppl, p. 31, n. 35, pl. Suppl. v*a*, figs. 65, 67, *male* (*nec* 66, *female*) (1878); *Deudorix enipeus*, Staudinger, var. *intermedius*, Staudinger, Ex. Schmett, p. 279 (1888).

HABITAT: Calcutta, Sylhet, Cachar, Burma, Malay Peninsula, Andaman Isles, Nias Island, Sumatra, Java.

EXPANSE: ♂, ♀, 1·1 to 1·5 inches.

DESCRIPTION: "MALE. UPPERSIDE, *both wings* deep fulvous inclining to red; near the middle the exterior border has a sudden angular projection, from which the borders continue broader to the base. *Forewing* with broad black borders on all the margins. *Hindwing* with very narrow black marginal threads exteriorly and posteriorly, and the nervures, in general, of the same colour; the anal region has in both sexes, within the extreme blackish boundary, a white thread, which encloses the anal appendage. UNDERSIDE, *both wings* grayish-brown with a slight cupreous reflexion, the disc marked with a short oblique white streak, delicately bordered with brown, and intermediate between this and the posterior margin is a saturated reddish-brown striga, being nearly straight in the forewing, and slightly interrupted in the hindwing, until it approaches the anal region, where it makes a sudden curve, becomes flexuose, and terminates near the middle of the interior margin; it has a faint exterior edge of white, which, in the hindwing, increases in intensity to the anal region, where it is of a brilliant satin white, and accompanied by a parallel interior striga of the same colour. *Hindwing*, anal appendage entirely covered by a round black spot; an oblong spot of the same colour extends exteriorly of the tail, in a marginal band of a more saturated tint than the ground-colour, surrounded by a ferruginous ring, but without a distinct iris; a round group of white atoms occupies the space between this and the anal appendage; a brilliant white thread, commencing near the middle of the posterior margin, winds along the anal region and appendage, being edged by the extreme brown *cilia*. *Body* covered with long delicate hairs, which are ferruginous-brown above and grayish underneath; *legs* banded alternately white and black; *tail* black, tipt with white; *eyes* with a pronounced white edge posteriorly; *antennæ* annulated with white, the club being tipt with brown. FEMALE. UPPERSIDE, *both wings* uniformly deep brown." Otherwise as in the male.

"LARVA varies at different periods in colour from yellow with a greenish cast, to dark ferruginous-brown, and at one period the lateral bands are very obscure. Feeds on *Schmiedelia racemosa*." (*Horsfield*, l. c.) Head rather large, segments increasing in size from the second to the fifth, thence to anal segment of equal size, with a subdorsal and lateral row of short tubercles bearing clumps of short closely-set bristly hairs; the body just above the legs fringed with hairs; there is a narrow black dorsal line, the segments blotched with black, a subdorsal reddish band. PUPA very rounded, the head and anal segment bluntly pointed, brown sprinkled with darker brown and reddish marks. Description drawn up from the figures in the Cat. Lep. Mus. E. I. C. from drawings made by Dr. Horsfield in Java. The larva and pupa of *R. xenophon* are very similar to those of *R. jarbas*.

There should be no difficulty in recognising the male of this species, the forewing having the veins red where they cross the red area, not black as in *R. jarbas*, Fabricius, the inner margin being broadly black, and the base also in the hindwing being broadly black. The female is dull brown, not strongly tinted with cupreous on the upperside, as in *R. jarbas*. On the underside the ground-colour in the male has a slight cupreous reflection, or is distinctly yellow, not dull grey, as in *R jarbas*; the female is of somewhat varying shades of brownish-yellow.

I find that in the large series of specimens of this species which I possess the extent of the red area on the upperside of both wings is considerably variable, the red area in one extreme being twice as large as in the other; I have therefore no hesitation in placing the male of the *Deudorix dieneces* of Hewitson as a synonym of *R xenophon*, all Hewitson says of it being that it differs "in the position of the red portion of the wing." The female of Hewitson's *D. dieneces* appears to be quite different, and not believing it to be the opposite sex of his male, I propose to restrict the name *dieneces* to the female only. Mr. Distant does not mention *R dieneces* at all in his "Rhopalocera Malayana," though it was described from Singapore. I append its description *

R. xenophon is a rather rare species in Calcutta; I have taken it in the winter only on the flowers of *Poinsettia pulcherrima* It does not appear to be common anywhere, though the late Mr. R. de Roepstorff sent a good many specimens from the Andaman Isles.

Rapala domitia, Hewitson, recorded from Malacca, Singapore, Sumatra, and Borneo, is a very curious species The male on the upperside has very much the colouring of the same side of the female of *Deudorix epijarbas*, Moore, with which also it more nearly agrees in the outline of the wings than with any species of the genus *Rapala* in which I have placed it. On the underside, however, it is totally different, being bright gamboge-yellow, with the forewing marked by three prominent black spots only, the hindwing having some deep black and metallic green markings towards the anal angle The secondary sexual characters consist of a tuft of black hairs on the inner margin of the forewing towards the base, turned under and upwards, and lying across a very large highly polished area extending from the inner margin to the first median nervule, and the usual "scale-mark" of the genus *Rapala* above the subcostal nervure of the hindwing, which patch of scales is however narrower than in any other species of the genus I have examined. The description of the species is appended.†

Genus 173.—BINDAHARA, Moore. (PLATE XXIX).

Bindahara, Moore Lep Cey, vol 1, p 111 (1881) id, Distant, Rhop Malay., p 247 (1884).

"FOREWING, short, triangular, *costa* much arched at the base, *exterior margin* oblique, *posterior* margin convex in the middle and furnished beneath with a tuft of hair [in the male; in the female the inner margin is straight, and there is no tuft of hair]; *first subcostal nervule* emitted at nearly one half, *second* subcostal at one-fifth, and *third* subcostal just before the end of the discoidal cell, *fourth* subcostal at one third from below the third, *fifth* subcostal from the

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**Rapala dieneces*, Hewitson. *Deudorix dieneces*, Hewitson, Ill Diurn Lep, Suppl, p 31, n. 35 (*female* only), pl Suppl va fig 66, *female* (*nec* figs 65, 67, *male*) (1878) HABITAT Singapore. EXPANSE *Female*, 1·3 inches. DESCRIPTION · "FEMALE UPPERSIDE, *both wings* rufous brown, the costa slightly rufous. UNDERSIDE, *both wings* grey white, crossed beyond the middle by a dark brown linear band bordered outwardly with white, also crossed by pale brown submarginal bands. *Hindwing* with the outer band broken into spots, the caudal spot (which is large) and the lobe black" (*Hewitson* l c)

My reasons for thinking that that which Mr. Hewitson believed to be the female of his *dieneces* cannot be the opposite sex of his species are these:—In the female he does not describe or figure the two short discocellular lines on the underside of both wings which are present in the male, in the male the outer submarginal band is not broken up into spots as it is in the female the caudal spot in the first median interspace is fully twice as large and not crowned with orange in the female as in the male, and finally the colour of the ground is so entirely different, in the male being said to be "ochreous brown," and in the female "grey-white."

† *Rapala domitia*, Hewitson. *Deudorix domitia* Hewitson, Ill. Diurn Lep., p 19, n. 7, pl. vi, figs. 6, 7, *male* (1863); id, Druce, Proc Zool Soc Lond, 18,, p 353, n 1, id, Butler, Trans Linn. Soc Lond, Zoology, second series, vol. 1, p 549, n 4 (1877), id, Distant Rhop. Malay, p 280, n 4, pl xxiii, fig 7, *male* (1885); id., Staudinger, Ex. Schmett, p. 279, pl. xcvi, *male* (1888) HABITAT: Malacca (*Butler*), Singapore (*Hewitson*), Sumatra (*Henley Grose Smith*), Borneo (*Druce*) EXPANSE 1·65 to 1·90 inches. DESCRIPTION. "MALE. UPPERSIDE, *both wings* rufous-brown. *Forewing* with a longitudinal rufous band within the cell. *Hindwing* with the anal lobe and the *cilia* at the base of the tails white UNDERSIDE, *both wings* yellow. *Forewing* with three black spots, one at the middle of the cell, a triangular one on the costal margin beyond the middle, and a smaller one between the second and third median nervules, the apex and a large spot on the inner margin grey *Hindwing* with one *tail* the outer margin brown, the caudal spot, the lobe, and two spots between them black, irrorated with blue, and above these two spots two parallel black lines. FEMALE does not differ from the male, except that the UNDERSIDE is nearly white, the third spot on the *forewing* scarcely seen." (*Hewitson*, l. c.)

end of the cell; *disco-cellular* nervules recurved, *lower discoidal* nervule from their middle; *discoidal cell* broad; *second median nervule* at one-fifth, *first* median at nearly one-half before the end of the cell. HINDWING, short, attenuated hindwards and produced into a very long tail [from the end of the first median nervule], anal angle lobed; *exterior margin* sinuous towards the tail; furnished with a prominent costal glandular patch [in the male only]; *costal nervure* abruptly arched at the base; *first subcostal nervule* emitted at one-half before the end of the cell; *disco-cellular* nervules oblique, *discoidal* nervule from their middle; *discoidal cell* broad; *second median nervule* from immediately before the end of the cell, *first* median at nearly one-half and extending to the end of the tail; *submedian nervure* straight, *internal* nervure recurved. BODY moderately stout; *palpi* porrect, [twice as long in the female as in the male], second joint squamose, very long, extending two-thirds beyond the head, third joint one-third its length, slender, naked; *legs* squamose, femora slightly pilose beneath; *antennæ* with a lengthened pointed club." (*Moore*, l. c.)

In the forewing the costal nervure ends opposite to the apex of the discoidal cell, the first subcostal nervule almost touches the costal nervure for a short distance, the base of the second subcostal is nearer to the base of the first subcostal than to that of the upper discoidal, the third subcostal originates about midway between the apices of the cell and of the wing; the disco-cellular nervules are upright, slightly concave, the middle a little shorter than the lower, the second median nervule originates some little distance before the lower end of the cell. In the hindwing in the male the glandular patch is large and well defined, almost quadrate, but with the two anterior corners a little rounded off; it is wholly placed anterior to the discoidal cell, and covers the base of the first subcostal nervule, but does not reach the point on the costal nervure where the upper disco-cellular norvule is given off; the disco-cellular nervules are of nearly equal length, straight, outwardly oblique, the second median nervule given off immediately before the lower end of the cell, The female has the wings broader and shorter than the male, the apex of the forewing less acute, the outer margin convex not straight, the hindwing much less produced hindwards, the tail shorter. The eyes are hairy.

Bindahara is a remarkable and most distinct genus, and is probably found in the Indo-Malayan region only. It occurs in North-East and South India, in Ceylon, in the Andaman and Nicobar Isles, in Burma, in the Malay Peninsula, and in several of the Islands of the Malay Archipelago. The male is very deep velvety black above, of almost exactly the same shade and character as *Apatura parysatis*, Westwood; the anal angle of the hindwing with the tail ochreous, the underside ochreous-brown, with darker brown bands and spots. In two species the male has a rich cyaneous patch on the outer margin of the hindwing on the upperside. The female is fuliginous-black above, the anal angle of the hindwing broadly white, enclosing a prominent deep black spot on the margin in the first median interspace, the tail white; underside also white, with rich deep brown bands and spots. The difference in the general appearance of the opposite sexes on the underside is perhaps greater than in any other Indian lycænid, owing to the ground-colour in the male being more or less fuscous, of the female pure white, though it is approached by the species of the genus *Sithon*, Hübner.

There has been terrible confusion regarding the proper identification of the species of this genus. The oldest described species is the *phocides* of Fabricius, who no doubt incorrectly recorded it from Africa. Mr. Butler doubtless gives a correct locality for it as Moulmein, Burma. The next species to be described is the *sugriva* of Horsfield. There can be no doubt whatever about this species, the male having a patch of blue on the upperside of the hindwing, a character which is presented by no other Indian species. As far as I know it is confined to South India, Ceylon, and Java. Mr. Moore quite incorrectly places this species as a synonym of *phocides*, with which it has nothing to do. The next oldest species is the *isabella* of Felder, described from the island of Amboina, the female of which, also from Amboina, was named *joleus* by Felder. With this species I am not concerned, though Hewitson certainly incorrectly states that it is synonymous with *phocides*; it has a blue patch on the upperside in the male as in *sugriva*. Lastly Felder described *areca* from Kar Nicobar, and *kamorta* from Sambelong, the native name for Great

Nicobar Island. These two species are undoubtedly male and female of one species. Hewitson gave *areca* as a synonym of *sugriva*, and *camorta* as a distinct species. Mr. Wood-Mason and I piled confusion upon confusion by recording *sugriva*, var *areca* from the Andaman Isles, while the species should have been *phocides* pure and simple. I trust that the synonymy of these species is satisfactorily cleared up in the following pages, to which end Mr. Distant has so largely contributed by pointing out what the true *phocides* is.

Key to the Indian species of Bindahara.

A. Male with no blue patch on the upperside of the hindwing.
  a. Both sexes, underside with prominent markings.
    1009. B. PHOCIDES, Sikkim, Bhutan, Sylhet, Burma, South Andamans, Malay Peninsula, Nias Island.
  b. Both sexes, underside with obsolete markings.
    1010. B. ARECA, Nicobar Isles.
B. Male with a blue patch on the upperside of the hindwing on the middle of the outer margin.
    1011. B. SUGRIVA, South India, Ceylon, Java.

1009. **Bindahara phocides,** Fabricius.

Hesperia phocides, Fabricius, Ent. Syst., vol. iii, pt. 1, p. 282, n. 85, *female* (1793); *Papilio phocides*, Donovan, Nat. Hist. Rep., vol. ii, pl. xliv, figs. 1, *female* (1834); *Myrina phocides*, Butler, Cat. Fab. Lep. B. M., p. 183, n. 1 (1869); *Bindahara phocides*, Distant, Rhop. Malay., p. 247, n. 1, pl. xx, fig. 25, *female* (1884); *Sithon sugriva* var. *areca*, Wood-Mason and de Nicéville, Journ. A. S. B., vol. xlix, pt. 2, p. 232, n. 45 (1880); idem, id., l. c., vol. l, pt. 2, p. 249, n. 65 (1881).

HABITAT. Africa? (*Fabricius* and *Donovan*), Moulmein (*Butler*), Province Wellesley, Perak, Singapore (*Distant*), Nias Island (*Kheil*), Burma (*Doherty*), Sikkim, Bhutan, Sylhet, South Andaman Isles.

EXPANSE. ♂, 1·25 to 1·70; ♀, 1·30 to 1·60 inches.

DESCRIPTION. "MALE. UPPERSIDE, *both wings* dark fuliginous brown. *Hindwing* with the *tail* and anal lobe ochraceous, the latter with a fuliginous spot. UNDERSIDE, *both wings* brownish-ochraceous. *Forewing* with the following castaneous markings:—a spot at the base of the cell, a broad outwardly curved fascia crossing the cell near the middle, commencing on the costal nervure and continued to about the submedian nervure; between this and the outer margin is another broad fascia, commencing near the costal margin and narrowly terminating at the submedian nervure; and a narrow, obscure and more fuscous submarginal fascia; at the end of the cell there is a narrow, discocellular castaneous streak. *Hindwing* with the following castaneous markings:—a series of basal spots, two narrow and much waved and sinuated discal fasciæ crossing the wing beyond the middle, between which and the basal spots is a broad obscure fascia commencing on the costal nervure and terminating at the median nervure; a dark submarginal line at the anal angle enclosing two blackish spots with scattered metallic greenish scales, and a prominent black spot on the anal lobe. *Body* and *legs* more or less concolorous with the wings. FEMALE. UPPERSIDE, *both wings* olivaceous-brown. *Hindwing* with a large white anal angular patch divided by the dark median nervules, and containing a large black marginal spot between the second and first median nervules, and a smaller and much more obsolete spot at the anal angle; *tail* and anal lobe white, with black basal streaks. UNDERSIDE, *both wings* whitish. *Forewing* with the castaneous markings as in the male, the outer fascia narrowly margined with white, and the remaining ground colour pale castaneous. *Hindwing* with the markings more distinct and linear than in the male." (*Distant*, l. c.)

Mr. Wood-Mason and I described the female of this species from the South Andaman Isles as follows:—"FEMALE. Smaller than the male. UPPERSIDE, *both wings* sepia-brown with a bronzy gloss, the spots and fasciæ of the underside scarcely showing through. *Hindwing* with a pure white patch divided by the brown veins, margined externally by a fine and sharp dark brown or black anteciliary line, and marked by a large circular black spot at the base of the tail on the anterior side and by another smaller lighter and less distinct one on the posterior side; with the caudal lobe blackish, and the *tail* black with pure white cilia.

UNDERSIDE, *both wings* pure white marked as in the male with dark sepia-brown fasciæ and spots, but with the black caudal spots larger and the *cilia* of the posterior part of the hindwing pure white like those of the tails."

"It differs from *S.* [=*B.*] *phocides*, female (=*S. jolcus*, Felder, Hewitson, Ill. Diurn. Lep., *Lycænidæ*, pl. xiii, figs. 16, 17[*]) in the far less extent of the white patch on the upperside of the hindwing, and in the larger size and darker colour of the spots and fasciæ, as well as in the greater pureness of the white, of the underside generally. A male from the South Andaman Isles differs from a specimen from the Indian continent (Sylhet) only in its rather darker and more distinctly marked underside. The lighter apical portion of the forewing in the male on the upperside has a beautiful bronzy gloss changing to dark purple according to the incidence of the light. Both the insular and continental specimens, but especially the former, present slight traces of the blue marginal band so conspicuous on the upperside of the hindwing of Javan and Ceylonese examples [the *sugriva* of Horsfield], in the shape of a small patch of metallic green scales on the anterior caudal lobe. The male of this species, with its velvety black upperside, rich dark brown underside, and elongated hindwing produced into a long robust buff tail, presents a strong contrast to the dull-coloured female with her pure dazzling white underside conspicuously spotted and banded with dark brown, broader wings, and comparatively short and feeble white and black tails."

"*Sithon* [*Bindahara*] *kamorta*, Felder, is not the female of *S. sugriva*, var. *areca* [=*phocides*], as Felder has suggested, but that of a distinct though closely-allied species peculiar to the Nicobars, whence the Museum has recently received a specimen of the true male differing from *S. kamorta* just in the same way as *S. sugriva* male does from its female, which appears not to have been previously described." (*Wood-Mason* and *de Nicéville*, l. c. in Journ. A. S. B., vol. xlix.)

Mr. Butler notes that "The type of *P. phocides*, Fabricius, is in the Banksian Collection; it is not the insect figured by Mr. Hewitson, which is the true female of Felder's *M. jolcus*, but it is the female of an Indian representative of Horsfield's *M. sugriva*, of which we have the male." (*Butler*, l. c.)

B. phocides appears to be fairly common in the South Andaman Isles, but is extremely rare on the Continent of India, as I have only seen four specimens, of which three are males, one from Sikkim, one from near Buxa, Bhutan, and one from Sylhet, and one is a female from the Khasi Hills in the collection of the Rev. Walter A. Hamilton. The Indian Museum, Calcutta, also possesses a single male example from Perak, and the Phayre Museum, Rangoon, another taken in Rangoon in September.

1010. **Bindahara areca,** Felder. (PLATE XXIX, FIG. 242 ♂).

Myrina areca, Felder, Verh. zool.-bot. Gesellsch. Wien, vol. xii, p. 481, n. 105 (1862); *M. kamorta*, id., l. c., p. 485, n. 121 (1862), *M. camorta*, Hewitson, Ill. Diurn. Lep., p. 36, n. 31 (1863).

HABITAT: Kar Nicobar, Sambelong (*Felder*), Nicobar Isles generally.

EXPANSE: ♂, 1·1 to 1·6; ♀, 1·0 to 1·5 inches.

DESCRIPTION: "MALE. UPPERSIDE, *both wings* purpurascent-blackish. *Forewing* with the outermost part paler. *Hindwing* with the anal region, an annexed litura, marked with a blue dot near the subanal tooth, and the *tail* pale ochraceous. UNDERSIDE, *both wings* fulvous-ochraceous, each with a broad discal fascia palely obsolete, with fuscous catenular strigæ, outwardly circled with whitish. *Forewing* with the external margin, *hindwing* with the margin of the apex concolorous, but shining, the latter with more obsolete spots on the disc, an anteciliary line and a posterior undulate streak blackish, beyond this four black spots, the first two obsolete, the remainder much larger, each one inwardly circled with a metallic greenish ring, and a black spot in the anal lobe."

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[*] The species here referred to is the *jolcus* of Felder, figured under that name by Hewitson from the island of Aru, which is almost certainly the female of Felder's *isabella*, and is quite distinct from *phocides*.

"Only one fine male was collected of this species, so distinct owing to the dark colour of its upperside. It is most nearly related to *M.* [= *B.*] *isabella*, Felder, from Amboina, and without doubt it is a representative form, but it has the size of the Javan species, *M. sugriva*, Horsfield. The want of the cyaneous blue spots on the outer margin of the hindwing, apart from the totally different underside, allows one easily to distinguish it." (*Felder*, l. c., p. 481.)

"FEMALE. UPPERSIDE, *both wings* brownish-fuscous *Hindwing* with the anal border and the tail whitish, a large spot at the base of which and the anal lobe blackish. UNDERSIDE, *both wings* whitish. *Forewing* with a single ochraceous-fulvous fascia beyond the disc catenulately sinuous. *Hindwing* with a slender interrupted flexuous striga beyond the disc, with two spots at the base of the tail powdered with blue, and the anal appendage deepest black."

"This stands very close to *M.* [= *B.*] *jolcus*, Felder, from Amboina, but a careful comparison sufficiently establishes the difference of the two forms. The fact that the only known specimens of *M. isabella* and *areca* are all males, while those of *M. jolcus* and *kamorta* are females, confirms me in the supposition that here merely the sexes of two species may lie before us. The construction of the palpi, in *M. sugriva*, *isabella*, and *areca* on the one hand, and in *jolcus* and *kamorta* on the other hand, differs much, such as we see also in both sexes of other allied species. The last joint of the palpi of the female is more than twice as long as in the male. [The fact] that *M. areca* and *kamorta*, both of them, differ from *M. isabella* and *jolcus* in the want of the first fascia on the underside of the forewing, and the spots on the basal half of the same side of the hindwing, may speak in favour of the foregoing supposition." (*Felder*, l. c. p. 485.) That is *B. areca* male and *kamorta* female are male and female of one species, and *B. isabella* male and *jolcus* female are male and female of a second species.

The male of *B. areca* is easily distinguished from that of *B. phocides*, Fabricius, by all the markings of the underside being more or less obsolete instead of prominent, and concolorous with the ground instead of rich dark castaneous. The female may also be known by the pale ochreous instead of dark brown markings of the underside, the absence of the broad band across the middle of the cell of the forewing which is present in *B. phocides*, and the general obsolescence of all the markings, especially on the hindwing. It appears to be a common species in the Nicobars, occurring on Kamorta, Naukowri, Kar Nicobar, Little Nicobar, and Great Nicobar.

The figure shews both sides of a male specimen from Great Nicobar in my collection.

1011. **Bindahara sugriva**, Horsfield.

Amblypodia sugriva, Horsfield, Cat. Lep. E. I. C., p. 105, n. 36; *Thecla sugriva*, id., l. c., pl. i, figs. 10, 10*a*, *male* (1829); *Myrina sugriva*, Horsfield and Moore, Cat. Lep. Mus. E. I. C., vol. i, p. 51, n. 89, pl. 1*a*, fig. 12, *male* (1857); *Bindahara phocides*, Moore (*nec* Fabricius), Lep. Cey., vol. i, p. 112, pl. xlii, figs. 3, *male*; 3*a*, *female* (1881).

HABITAT: South India, Ceylon, Java.

EXPANSE: ♂, 1·4 to 1·6; ♀, 1·2 to 1·5 inches.

DESCRIPTION: "MALE. Extent of wing proportionally great in the longitudinal direction of the body. UPPERSIDE, *both wings* black. *Forewing* with the extreme costal nervure yellowish, and marked near the apex with three delicate oblique black lines. *Hindwing* narrow, gradually tapering to the anal extremity, with a single marginal notch near the base of the tail; with a broad cyaneous marginal band varying according to the aspect to saturated sea-green, terminating at a small distance from the outer apical angle; inner margin brown from the base to the middle, then yellowish-gray and in the anal region orange, which colour extends to the extremity of the tail; there are two black lunules in the anal region, one exterior near the marginal notch, one on the anal appendage. UNDERSIDE, *both wings* ochraceous-brown, with spots and bands of a more saturated colour bordered throughout with a delicate yellowish line. *Forewing* bearing an oblong spot near the base, a short transverse stigma on the disc, and three broad transverse bands; the first, at a small distance from the base, dimidial, abruptly terminated at the anal areola, the next a little beyond the disc, extending across the whole surface attenuated and tending slightly to the inner apical angle, with an irregularly waving posterior margin; the third somewhat narrower than the former consists of adjoining spots, and extends in a gentle curve over the exterior portion of the wing. *Hindwing* has an oval spot near the base in contact with the costa, then a broad irregularly-interrupted band passing in an arch across the surface, composed near the costa of subconfluent maculæ, but on the disc and near the inner margin of several successive pairs of distinct oval spots; behind the disc a series of brown arcs margined with yellow forms a curved band which extends over the whole surface, being simple near the exterior margin, but consisting of a double series of parallel arcs more deeply tinctured as they approach the inner margin; beyond this follows a delicate brown thread which extends flexuose across the entire wing, forming an inner boundary to a series of oblong spots close to and parallel with the margin, which is continued in the anal region by two deep black ocelli, one at each side of the base of the tail, an oblong spot of the same colour marking the anal appendage, all these being adorned individually, at their internal edge, by a delicate streak of greenish silvery irrorations. *Body* black above, covered with a white down underneath. *Antennæ* black with a ferruginous tip, sprinkled with a beautiful snow-white powder underneath to the base of the club, gradually increasing in intensity of tint exteriorly. *Tail* uniformly bright orange, with a medial nerve of the same colour, and a delicate fringe at the sides and tip of a paler tint." (*Horsfield*, l. c.) "FEMALE. UPPERSIDE, *both wings* olive-brown, in some aspects glossy aenescent-brown. *Hindwing* with the anal area and *tail* white, a large black spot at the outer base of the tail, and a black-speckled spot on the anal lobe. UNDERSIDE, *both wings* white, marked as in the male." (*Moore*, l. c in Lep. Cey.)

The male of *B. sugriva* is easily enough recognised by the blue fascia on the upperside of the hindwing, but I can find no character by which to distinguish the female of this species from that of *B. phocides*, Fabricius. Mr. G. F. Hampson has taken *B. sugriva* on the Nilgiris from 2,000 to 4,000 feet elevation, Mr. Harold S. Ferguson finds it rarely in Travancore, in Ceylon it occurs at "Kandy and Galle Male plentiful in the Botanical Gardens at Kandy. Difficult to capture, as they settle very high and are rather shy" (*Wade*).

Genus 174.—VIRACHOLA, Moore. (FRONTISPIECE).

Virachola, Moore, Lep. Cey., vol. i, p. 104 (1881).

"Allied to *Deudorix*, Hewitson. FOREWING, comparatively more triangular, *costa* longer, *exterior margin* more oblique, *posterior margin* in the male convexly produced towards the base and furnished beneath with a broad tuft of long hairs; *veins* similar to those in *Deudorix*, but the *third* and *fifth subcostal nervules* emitted from the end of the discoidal cell, the *second* and *first median* nervules somewhat nearer the end of the cell, the *submedian nervure* straight. HINDWING, more convex along the *costa*, which in the male has a large rounded depressed roughened glandular space extending from beneath the costal nervure across the two subcostal nervules to the upper part of the cell, both the subcostal nervules being grooved within the depressed area. Type *V. perse*, Hewitson." (*Moore*, l. c.)

In the forewing the costal nervure extends to some little distance beyond the apex of the discoidal cell, which is an unusual feature; in the male the second subcostal and upper discoidal nervules may be said to have almost a common origin at the apex of the cell, in the female the second subcostal originates long before the apex of the cell, about midway between the bases of the first subcostal and upper discoidal nervules; the third subcostal nervule is long and does not reach the apex of the wing; the middle disco-cellular meets the upper discoidal nervule just after the origin of the latter, and is about half as long as the lower disco-cellular, both are concave and upright; the second median nervule originates some little distance before the lower end of the cell; the submedian nervure is very sinuous in the male, straight in the female; in the male there is a tuft of hairs as described by Mr. Moore turned upwards from the inner margin, the roots of the hairs on the margin; the latter is very sinuous. In the hindwing the glandular

depressed (as seen from above) secondary sexual character in the male is pear-shaped, with its narrow end directed towards the base of the wing, extends slightly into the discoidal cell, and covers the bases of the subcostal nervules, reaching exactly to the point where the middle disco-cellular arises ; the disco-cellular nervules are outwardly oblique, nearly in one straight line, of equal length ; the second median nervule has its origin just before the lower end of the discoidal cell. The palpi in the males are much shorter and more slender than in the females. The eyes are hairy.

Virachola is abundantly distinct from *Deudorix*, Hewitson, and *Lehera*, Moore, neither of which have secondary sexual characters in the male. The shape and position of the glandular patch on the hindwing of the male will alone distinguish *Virachola* from the other genera of this group which possess male secondary sexual characters and have one tail and an anal lobe.

The genus at present contains three species, all of which are strictly confined to the Indian region, unless the *Deudorix antalus*, Hopffer (*vide* Trimen's " South African Butterflies," vol. ii, p. 107), which is said to be a near ally of *V. isocrates*, Fabricius, should turn out to be congeneric. The life-history of two of them is almost thoroughly known, the third species, *V. smilis*, Hewitson, is very rare, and the female imago has alone been described. The larvæ of *V. isocrates*, Fabricius, and *V. perse*, Hewitson, are internal feeders, eating the seeds of various fruits ; a full description of their interesting habits will be found under the descriptions of the species. All three butterflies of the genus are of large size, brightly coloured, with markings on the underside very much as in *Deudorix epijarbas*, Moore. The female of *V. isocrates* is aberrant, as it alone has no blue coloration on the upperside. Their flight is extraordinarily rapid, and can hardly be followed by the eye, but they usually soon settle and are then easy to catch.

Key to the species of Virachola.

A. Both sexes, underside, forewing with no spot in the cell towards the base in addition to the one on the disco-cellular nervules
  a. Male, upperside deep violet-blue, with a rich purple iridescent gloss in some lights ; female, upperside violet-brown, with no purple gloss.
    1012. V. ISOCRATES, throughout India except the desert tracts, Ceylon.
  b. Male and female, upperside black, the lower basal area of the forewing and discal area of hindwing bright blue, no iridescent shot in the male.
    1013. V. PERSE, throughout India except the desert tracts, Ceylon.
B. Female, underside, forewing with a large spot in the cell towards the base in addition to the one on the disco-cellular nervules.
    1014. V. SMILIS, East India, Andaman Isles.

1012. Virachola isocrates, Fabricius.

Hesperia isocrates, Fabricius, Ent Syst, vol. iii, pt. 1, p. 266, n. 29 (1793) ; *Polyommatus isocrates*, Godart, Enc. Méth. vol. ix, p. 633, n 59 (1823) ; *Thecla isocrates*, Westwood, Trans. Ent Soc. Lond., first series, vol ii, p. 1, pl. i, *male* and *female*, *structure of imago*, and *pupa* (1837) ; *Dipsas isocrates*, Horsfield and Moore, Cat Lep Mus E I C, p 33, n 42 (1857) ; *Deudorix isocrates*, Butler, Cat. Fab Lep B M, p 181, n 4 (1869), *Virachola isocrates*, Moore, Lep Cey, vol. i, p. 104 (1881) ; *Hesperia pann*, Fabricius. Ent. Syst, vol iii, pt. 1, p. 276, n 67 (1793) ; *Papilio pann*, Donovan, Ins. India, pl xxxviii, fig 1, *female* (1800) ; On the habits of a species of Hair Streak, belonging to the genus *Thecla*, Downes, Calcutta, Journ. Nat. Hist, vol. ii, p. 408 (1842).

HABITAT : Throughout the plains of India (except the desert tracts, Assam and Burma), Ceylon.

EXPANSE : ♂, 1·5 to 1·8 ; ♀, 1·8 to 2·0 inches.

DESCRIPTION : " MALE. UPPERSIDE, *both wings* deep violet-blue, [the lower discal area of the forewing and almost the entire surface of the hindwing glossed in some lights with brilliant violet.] *Forewing* with a very indistinct ochreous spot, visible only in certain lights, beyond the cell. *Hindwing* with a slender black marginal line and small anal spots, the latter grey-speckled. *Cilia* greyish-white. UNDERSIDE, *both wings* pale vinous-grey, with a white-bordered disco-cellular streak, a discal transverse broad catenulated band, and a less distinct single white submarginal line. *Hindwing* with a large black anal and subanal spot, the former inwardly white-bordered, the latter with an ochreous border, intervening space blue-speckled. FEMALE. UPPERSIDE, *both wings* violet-brown. *Forewing* with a more distinct ochreous spot beyond the cell than in the male, which is diffused hindwards in some specimens. *Hindwing* with a prominent subanal black spot which is inwardly bordered with ochreous, and outwardly by grey-white speckles, the speckles continued to the anal angle." UNDERSIDE, *both wings* as in the male. (*Moore*, l. c. in Lep. Cey.)

LARVA ·8 of an inch in length when full-grown ; ground-colour blackish-brown, the constrictions between the segments well-marked, the head comparatively large, fuscous, covered with rugosities or short semicircular tubercles, the segments rapidly increasing in size to the fourth, then gradually tapering to the thirteenth, which latter is about as wide as the second segment ; second segment anteriorly flesh-coloured, the third segment entirely flesh-coloured, the seventh and eighth bearing a large dorsal square flesh-coloured patch, the three anal segments scutate, all the segments widely pitted and covered with short but coarse black bristles, which are more numerous at the sides and whitish. This larva is very ugly, to be accounted for perhaps by its passing its life out of sight in the interior of a fruit. In Calcutta I have reared the larva on the fruit of the *Randia dumetorum*, Lamk., which belongs to the Mader family (*Rubiaceæ*). I once found a larva in the fruit of the Loquot (*Eriobotrya japonica*, Lindl), of which it ate the hard central seed or stone only. It emerged on April 4th. Messrs. F. E. Pargiter and E. C. Cotes have bred it from the fruit of the Guava (*Psidium guava*, Raddi). Its usual food appears however to be the fruit of the pomegranate (*Punica granatum*, Linnæus). PUPA of the usual lycænid shape, brown, marked with a dorsal and lateral black line, the whole surface very rough, covered with tiny pits, furnished with a few short coarse bristles, which are most numerous round the sharp anterior ridge which encloses the head ; the wing-cases pale ochreous ; head rounded, anal segment blunt.

"This butterfly [*Virachola isocrates*] resides in the larva state in the interior of the pomegranate, seven or eight, at least [this is very unusual, I have never found more than one larva or pupa in a single fruit, two or three would probably be the maximum ordinarily, even then one or more would probably have to emigrate to a fresh fruit, before becoming full-fed], having been reared in the interior of the small fruit now exhibited. Of the mode in which the eggs are deposited by the female in the interior of the pomegranate no information has been received ; it is, however, probable that this is effected whilst the fruit is in its very young state. [The eggs are laid by the butterfly in the calyx of the flower of the young fruit.] The caterpillars feed upon the seeds and inner part of the fruit, which is thus rendered weak, and unable to support its own weight, and consequently liable to have its stem broken, and to fall to the ground with the first wind. This, however, would be destruction to the inclosed insects, since, in all probability, they would find it impossible to make their escape were the fruit to be suffered to lay rotting upon the ground. To obviate this evil, the caterpillars, when full-fed, have the instinct to eat a hole [this is incorrectly stated, there is always a hole in the fruit for the larva to cast forth its dejections], about a quarter of an inch in diameter, through the hard shell of the fruit, whilst it remains upon the tree ; through this hole they then creep to the stem of the fruit, and spin a white web, which they attach to the basal part of the fruit as well as to the stem, for about the distance of an inch along the latter. This web is sufficiently strong to support the pomegranate from falling after the wind has broken the stem near to the fruit."

"From the circumstance of this specimen of the fruit exhibited having as many holes in it as there were caterpillars inhabiting it, it is most probable that the web thus spun is a joint production of the whole. It is curious, as evidencing the instinctive impulses under which each of the inclosed larvæ must have acted, that, instead of availing themselves of the first aperture made in the fruit, each caterpillar should be at the trouble of making a hole for itself, a circumstance which renders it the more probable that all joined in spinning the web."

"But it will be at once asked, what necessity could there be for the caterpillars to secure the fruit from falling after each has bored a hole, and thus made its escape? This question is answered by the curious circumstance that, after so securing the fruit, the caterpillars return again into the pomegranate, in the hollow interior of which they undergo their transformations to the chrysalis state."

"Here, too, we may notice another interesting fact; namely, that the insect has the precautionary instinct, which acts as a second inducement, to make the aperture in the fruit in that stage of its existence in which it is furnished with organs best adapted for the purpose; for, had the larva omitted taking this step, the consequence would have been, that the poor insect, when come to its butterfly state, would have been a prisoner totally unable to make its escape, being unprovided with any instrument sufficiently powerful to make a hole in the shell."

"The chrysalides are attached horizontally upon the inner walls of the pomegranate, by means, first, of a patch of silk laid upon its surface, to the centre of which the tail of the chrysalis is attached, and second, of a slender silken thread passing from side to side over the base of the abdominal segments."

"Another curious instance of instinct yet remains to be noticed. The butterfly, so soon as ever it has escaped from the puparium, must make its escape out of the hole formed by the larva. Delay would be death, as the wings would soon acquire their full expansion of nearly a couple of inches, in which state it would, of course, be unable to creep out."

"In the chrysalis state the belly of the insect is placed in contact with the inner surface of the fruit; consequently, as the slit by which the butterfly escapes out of the puparium extends along the back, the under surface of the latter remains entire, the anterior lateral portions on each side the slit (extending as far as the whole coverings of the wings) curling up and laying close upon those parts which have covered the breast and limbs, leaving the abdominal portion in the same form as when it inclosed the insect" (*Westwood*, l. c.)

"At the time the pomegranate is in flower, and at a very early period, the Hair Streak may be seen very busily occupied about the flowers, and I have little doubt that the eggs are deposited at the bottom of the calyx, from the position in which I have seen the abdomen of the butterfly placed; as the fruit enlarges the eggs are enclosed, and in this situation matured."

"In order that I might obtain a perfect insect, I surrounded several of the fruit with fine gauze, but in such a manner as not in the least to interfere with the caterpillar in its labour of connecting the fruit and stalk by means of the web, but to my astonishment and disappointment this never took place; the caterpillars issued from the fruit, and finding their escape impeded, underwent their change on the external part, and so soon as this was effected, I removed the fruit from the tree for the purpose of placing it in a mosquito gauze house in my room Subsequently I examined several of the fruit, but I never found any chrysalidæ, or the remains of any inside the fruit. I was very careful in my observations, and I came to the conclusion that the caterpillars in this instance deserted the fruit when ready to undergo their change." (*Downes*, l. c.) Professor Westwood is quite correct; there is no doubt that in nature this butterfly usually pupates within the fruit, on opening these I have found at different times dozens of pupæ or pupæ skins, but never more than one in each fruit. Mr. Downes is also partially right, as if the fruit are cut off the tree and placed in a box, the larvæ when full-fed will leave the fruit and pupate anywhere on the sides of the box or on the fruit.

There is one interesting question still to be referred to in the life-history of this butterfly—is it attended or not by ants in its larval state, and has it the special organs affected by the ants? Mr. W. C Taylor, of Khorda, Orissa, writes "Larva attended by the ant *Formica nigra*, who clear away their droppings and act as sweepers, as well as guard the pupæ." His daughter, Mrs. Wylly, also writes "The larva of *Virachola isocrates* though louse-like in shape, differs considerably from those of *Catochrysops cnejus*, Fabricius, *Azanus ubaldus*, Cramer, and *Tarucus theophrastus*, Fabricius. The latter are inert and slow, the former is very brisk in its movements, and with the protrusible long neck, small head and strong jaws of a beetle grub, is no doubt well-adapted for the work required in making its home. The length of the larva when full-fed is rather more than an inch, and in colour and shape much resembles a ripe mulberry. It had a glossy shining skin, very knobby and indented all over, of a blue and purple colour, and its three posterior segments covered with a squarish shield with a raised dingy yellow rim to it. The larva bores for itself when quite young a little clean-cut round hole from the outer rind of the fruit of *Punica granatum* to the heart. In this hole it spends its days with its head inside eating away at the green or ripening pips, and enlarging the hole as it increases itself in size. Sometimes three or four larvæ may be found buried in one pomegranate. When at rest and not eating it plugs up the outer hole deftly with the shield on its tail. It is a curious fact that the ants in the case of this species act as sweepers to the larva, hovering in attendance round the mouth of each hole and performing all the cleaning out operations with great regularity. The larva never leaves the fruit till full-grown [this is doubtful, I think it often seeks a fresh fruit, as I have frequently found a small fruit with the whole interior eaten and quite clean, and no pupa or pupa-skin, so in all probability the larva which inhabited that fruit had left it, and sought another], and then it descends the bark and seeks some crevice, crack, or knot in the stem of the tree, and there undergoes its transformations. The ants, as far as I could see, did not convey the larvæ to their nest at the foot of the tree, but as there were many larvæ on the tree and few pupæ, some may have been removed to their nest. [These missing pupæ were probably inside the fruit.] I was unable to find any eggs on the fruit or flowers, nor have I ever observed the ants "milking" any of the larvæ, nor any appearance of tentacles being present. The larva spins a slight but strong web from its mouth with which it binds the fruit to the stalk to prevent its being blown off by the wind, and later uses the silk to fasten itself to by the tail when ready to change to a pupa. The pupa is also attached by two threads flatly to the trunk, and is of a pinkish-brown colour like the bark of the pomegranate tree, with various speckles and marks of a darker brown, and a dark dorsal line dividing it down the centre. The head of the pupa is covered with a kind of plate rounded in front, straight at the neck." For my own part I have never seen ants attending the larvæ, nor have I been able to find the special organs affected by them, and without these I fail to see why ants should take any trouble for the larvæ.

"It is almost impossible with the net to get a really good specimen of *V. isocrates* or of *V. perse*. They are not only difficult to catch, but exceedingly swift, wary, and given to settling on high trees, but, when caught, difficult to secure without injury. There is a delicate bloom on a fresh specimen which the gentlest touch destroys. It is easily reared however. As is well known, the larva feeds inside the fruit of the pomegranate, and, some time before becoming a pupa, eats its way* through the tough rind and fastens the fruit with silk to its stalk, thus preventing it falling off in case it should wither before the Butterfly escapes, as it generally does. This operation is performed at night, and generally repeated night after night. I have taken a pomegranate infested with these larvæ (several usually inhabit each fruit) and made it stand in an egg-cup; in the morning it was so securely fastened that in taking up the fruit I lifted the cup. Of all animal instincts that I have seen or heard of, this is one of the most astonishing, and certainly the most difficult to reconcile with any theory of development. As far as I have observed it, the larva never leaves its shelter except for the definite purpose so necessary to its safety, and it taxes ordinary ingenuity to suggest any possible conditions under which some larvæ might have performed the act in the first instance without purpose. I have found this butterfly pretty common in Bombay and Poona from December or January till March at least." (*Aitken*, Journ. Bombay Nat. Hist. Soc., vol. i, p. 216, n. 46 (1886).

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* This statement is slightly misleading. From the very earliest stages the young larva makes a hole in the fruit, which it gradually enlarges as it grows, and through which it throws out its dejections. At any period the larva can leave the fruit in which it lives, and in fact not infrequently does so, entering a fresh fruit which suits it better.

Mr. F. E. Pargiter in 1881 wrote this note "The larva [of *V. isocrates*] feeds on the leaves [?] and fruit of the Guava tree. It is rather plentifully clothed with short whitish hair. In the two white spots at the tail are two small horn-like processes, which the larva continually protrudes and retracts." This latter note appears to be conclusive as to the larva having the special organs affected by ants, and that it is attended by ants, though I have failed to find these.

V. isocrates is very common in Calcutta during the winter, much affecting the flowers of the *Poinsettia*. It appears to occur almost everywhere in the plains of India except the desert tracts, but it is not found in Assam or Burma

1013. **Virachola perse,** Hewitson.

Deudorix perse, Hewitson, Ill Diurn. Lep, p 18, n 2, pl. viii, figs 24, 25 ***male***; 26, ***female*** (1863), ***Virachola perse***, Moore, Lep Cey., vol i, p 104, pl. xl, figs. 1, ***male***, 1a. ***female*** (1881); idem, id., Proc Zool Lond, 1882, p 250

HABITAT: Himalayas, Dehra Dun, Orissa, Bombay, Nilgiris, Ceylon.

EXPANSE: ♂, 1·40 to 1·95; ♀, 1·80 to 2·35 inches.

DESCRIPTION: "MALE. UPPERSIDE, *both wings* brown, the middle silvery blue. *Hindwing* with the veins and a spot on the anal lobe black. UNDERSIDE, *both wings* with a spot at the end of the cell and a transverse macular band beyond the middle, all rufous-brown, bordered on both sides with black, a submarginal band of brown spots. *Hindwing* with a black spot near the base; the caudal spot, the lobe, and spot between them which is irrorated with blue, black FEMALE, differs only from the male in being larger, and in having a medial spot of white on the UPPERSIDE of the *forewing*" (*Hewitson*, l. c.)

MALE UPPERSIDE, *both wings* deep purplish black, deeper black in the discoidal cell. *Cilia* slightly ochreous *Forewing* with the basal area from the inner margin to just within the discoidal cell, not nearly reaching the outer margin, and bounded anteriorly partly by the first median nervule, rich shining bright blue, the wing sometimes otherwise unmarked, sometimes with a small, often with a large round discal ferruginous ochreous spot or patch beyond the cell. *Hindwing* with the costa broadly, the outer margin decreasingly black, the abdominal margin pale fuscous, the rest of the wing blue as in the forewing; the anal lobe centred with dull ochreous, outwardly marked by a black spot, *tail* black tipped with white. UNDERSIDE, *both wings* reddish vinous *Forewing* with the inner margin paler; two heavy short black lines on either side of the disco cellular nervules, a discal catenulated band from the costa to the submedian interspace, each spot with blackish outer edges, an indistinct submarginal macular darker fascia. *Hindwing* with a prominent blackish rounded spot towards the base of the wing below the costal nervure; two spots enclosing the disco cellular nervules; a discal irregular catenulated band, a submarginal indistinct macular fascia; the anal lobe black, a small round black spot on the margin in the first median interspace surrounded by a pale ochreous ring FEMALE. UPPERSIDE, *both wings* with the blue coloration paler and more diffused than in the male, merging into a whitish patch, sometimes tinged with ochreous, beyond the cell in the *forewing* Otherwise as in the male

The LARVA when full-grown and fully extended is about ·9 of an inch in length, sometimes even 1·1 inches long, its general ground colour is rather deep flesh-colour or pinky, more or less irregularly blotched with darker reddish-brown; the whole surface is smooth and shiny, thickly set with minute black hairs or bristles. The divisions between the segments are fairly-well marked, as each segment slopes gradually upwards from before backwards, all the segments are very much wrinkled and pitted, and each bears below the spiracles a small wart-like tubercle covered with longish white bristles; there is also a similar but smaller subdorsal series of tubercles and bristles The larva is of the usual lycænid shape, the head smooth, pale, and completely retractile into the second segment, the third segment the largest, whence the remaining segments gradually decrease in width to the last. The two anal segments are abruptly cut off or flattened from above (scutate), this round depressed portion being largely used by the larva when at rest inside the fruit on which it feeds to close the orifice in the fruit through which its evacuations are ejected. In some specimens on the seventh and eighth segments in the middle of the back are two large square yellowish-white marks, one on each segment, divided on the dorsal line by a line of the ground-colour. The PUPA is also of the usual lycænid shape, coloured very similarly to the larva, being pinkish-brown blotched with darker brown or black, with a few short bristles at the sides. The larva changes to a pupa inside the fruit; and to protect itself spins a most perfect trap-door furnished with a hinge on one side on the inside of the fruit, and turns to a pupa with its head placed exactly opposite the trap-door. The trap-door opens inwards, and I presume the imago on emerging draws the door towards itself with its front legs and thus makes an opening by which to emerge. I can find no trace of the erectile tubercles on the twelfth or of the mouth-like opening on the eleventh segment that are often present in lycænid larvæ, and I presume such would be useless, as ants do not attend these larvæ as far as I have seen. The larvæ feed on the fruit of *Randia dumetorum*, Lamk. The above description has been taken from larvæ obtained in Sikkim at about 2,500, in January, on the 20th of the month the fruit contained both larvæ full-grown or nearly so and pupæ.

"I do not think I have met with *V. perse*, Hewitson, except on the hills, where it is common, appearing in December when the fruit of the "Ghela" (*Randia dumetorum*), on which the larva feeds, is ripening, and remaining till March or April. The larva has the same curious instinct as *V. isocrates*, Fabricius, and needs it more, for the Ghela fruit withers at once when attacked, and would inevitably fall before its tenant had reached the pupa state if not artificially supported. I have found only one larva in each fruit, and have sometimes noticed ants going in and out of the hole made by it, for what purpose I cannot say. The stony hardness of the fruit turns the edge of one's penknife and of one's curiosity too. This Butterfly has the habit of taking its station, during the hottest hours of the day, on a particular leaf, from which it darts out in pursuit of every other Butterfly that passes by. This habit characterises a few brilliant genera in families widely different. It is strong in *Charaxes*." (*Aitken*, Journ. Bombay Nat. Hist. Soc. vol. i, p. 216, n. 47, 1886) Mr. Aitken's note regarding ants visiting the larvæ of this species is interesting, if the larvæ really do not possess the special organs for secreting the fluid of which ants are so fond, I fail to see what can be their object in attending the larvæ.

V. perse has a wide range Mr. A Grahame Young has taken it at Mundi in the Western Himalayas at 3,200 feet elevation in August, Mr. Hocking also obtained it in the Kangra Valley, Mr. P. W. Mackinnon at Masuri and in the Dehra Dun, in Sikkim it is on the wing in January, February, March, May, October, November, and December, and not improbably may be met with there in every month in the year, Mr. W. C. Taylor has sent me many specimens from Orissa, it occurs according to Colonel Swinhoe in many localities in the Bombay Presidency, Mr. G. F. Hampson informs me that it is found in the plains at the foot of the Nilgiris, but is not common, and lastly in Ceylon it occurs in the "Eastern Province, plains, forest-land, rare, August" (*Hutchison*).

1014. **Virachola amilis,** Hewitson. (FRONTISPIECE, FIG. 127 ♀).

Deudorix amilis, Hewitson, Ill Diurn. Lep., p. 18, n 3, pl. viii, figs 22, 23, *female* (1863).

HABITAT: East India (*Hewitson*), South Andaman Isles.

EXPANSE: ♀, 1·7 to 2·0 inches.

DESCRIPTION: "FEMALE. UPPERSIDE, *both wings* brown, the middle cerulean blue. *Hindwing* tailed; the veins, the caudal spot, a spot on the anal lobe, a submarginal line, and the *tail* (except the tip) black. UNDERSIDE, *both wings* with the spots and bands as in *Amblypodia*, [=*Arhopala*, Boisduval]; with spots near the base, a large spot at the end of the cell, a transverse band (broken at the middle of the forewing), all rufous-brown, bordered on both sides with black. *Forewing* with a submarginal band of brown spots. *Hindwing* with the caudal spot, the lobe (which is crowned with silver), a spot between them (which is irrorated with silvery blue), the outer margin, and the *tail*, all black; a band of pale blue above the lobe, and a submarginal line of white." (*Hewitson*, l. c.)

FEMALE. UPPERSIDE, *forewing* with the costa broadly, the outer margin more broadly, the apex broadest of all, black; the rest of the wing bluish-purple, occupying the lower half of the discoidal cell. *Hindwing* with the costa and outer margin broadly black, the abdominal margin pale fuscous, the disc bluish-purple, with the anal lobe black, inwardly marked with a dull ochreous line, outwardly with a line of metallic green scales, leaving the middle of the lobe black. UNDERSIDE, *both wings* pale vinous brown. *Forewing* with a round dark spot near the base of the discoidal cell, a large quadrate spot closing the cell, a discal catenulated band consisting of seven spots, the series strongly broken in the middle, the three lower spots below the third median nervule being shifted strongly inwards, a spot in the submedian interspace just below the origin of the first median nervule, a macular indistinct submarginal fascia. *Hindwing* with a large round rich deep brown spot in the subcostal interspace near the base of the wing, a duplex heavy spot on the disco-cellular nervules, an irregular discal catenulated macular band, its lower portion shaped like a bill-hook, the handle of the hook on the abdominal margin, with a rounded spot above it on the margin near the base of the wing; the anal lobe intensely black, a small round black spot in the first median interspace on the margin faintly surrounded with ochreous; between this spot and the anal lobe is a patch of brilliant metallic green scales, which are continued up to the abdominal margin; a fine anteciliary black line, inwardly defined by an equally fine white line.

This description has been made from a single female example taken by Mr. R. Wimberley in the Andaman Isles. The species must be very rare. Mr. Hewitson's locality for it, "East India," is terribly vague.

The figure shews both sides of the specimen above-mentioned in my collection.

Genus 176.—SINTHUSA, Moore. (FRONTISPIECE).

Sinthusa, Moore, Journ. A. S. B., vol. liii, pt. 2, p. 33 (1884); id., Distant, Rhop. Malay. p. 462 (1886).

"MALE. FOREWING, small, somewhat broad; *costa* arched at the base, *apex* pointed *exterior margin* slightly oblique and convex, *posterior* margin convex near the base; *subcostal nervure* five-branched, *first subcostal nervule* emitted at nearly one-half, *second* at one-fourth, and *third* from near the end of the cell, third bifid near its end; *discoidal cell* extending to half length of the wing; *disco-cellular nervule* slender; *discoidal* nervule from its middle; *first median* nervule at more than one-third and *second* median from near the end of the cell; *submedian nervure* straight. HINDWING, small, short, broad, *costa* arched in the middle, *exterior margin* with a single slender *tail* from the end of the first median nervule; *discoidal cell* broad, triangular, extending half the wing; *first subcostal nervule* at one-half before the end of the cell; *disco-cellular* nervule oblique, slender; *discoidal* nervule from its middle; *first median* nervule at nearly one-half and *second* median from near the end of the cell; *submedian* and *internal nervures* recurved. *Palpi* porrect, second joint long, third joint short, slender, pointed; *antennæ* with a large thick-pointed club. Type *S. nasaka*, Horsfield." (*Moore*, l. c.)

In the forewing of the type species the costal nervure reaches to a little beyond the apex of the discoidal cell, the first subcostal nervule originates at about two-thirds of the length of the cell from the base, and is bowed upwards towards the costal nervure, which it almost touches for some little distance, the second subcostal is given off about midway between the bases of the first subcostal and upper discoidal, the third subcostal is short, and arises nearer to the apex of the wing than of the cell; the disco-cellular nervules are upright, nearly straight, the middle shorter than the lower; the second median nervule is given off some little distance before the lowere nd of the cell; in the male the inner margin is bulged out just before its middle, and furnished with a tuft of hairs attached to the margin and turned forwards. In the hindwing there is a small anal lobe in addition to the single tail; the disco-cellular nervules are straight and strongly outwardly oblique, of equal length; the male is furnished with an oval depressed (as seen from above) glandular patch below the costa extending posteriorly slightly into the discoidal cell, and occupying the area formed by the bases of the subcostal nervules, its greatest area being in the subcostal interspace above the subcostal nervure. In shape this patch is as in *Virachola*, in which genus it reaches to the origin of the upper disco-cellular nervule, while here it stops considerably short of that point. The eyes are very hairy.

The genus *Sinthusa* appears to be a small and compact one, containing eight species up to date according to the various authors who have described them. There is much similarity between them; in the males of all except *S. virgo*, Elwes, the upperside is black, the basal half of the forewing obscurely blue, of the hindwing more or less brilliant blue. In *S. virgo* the upperside is pale blue with broad outer black margins. On the underside all the species have a short band defining the disco-cellular nervules, and a discal band which is more or less broken on both wings, the hindwing with the anal lobe and the spot in the first median interspace on the margin black crowned with orange, with some greenish-silvery markings between them and above the anal lobe. The females are fuliginous-black above, sometimes with an orange or ochreous-white patch on the disc of the forewing, usually with more or less white towards the anal angle of the hindwing. All the species are forest insects, of small size, and quick flight, settling on the leaves of trees and bushes. The genus occurs throughout the Himalayas, in Assam, and thence southwards through the Malay Peninsula, and in Sumatra, Java, and China. The Indian species appear to be very variable, and when all shall be thoroughly known about them several will doubtless have to be sunk as synonyms. The females of all the species are very much rarer than the males.

Key to the Indian species of Sinthusa.

A. Male, upperside, forewing obscure dark blue on basal half, hindwing rich brilliant blue.
  a. Male, upperside, hindwing usually with the blue coloration confined broadly to the outer margin: both sexes, underside, with the markings very narrow, straight, and clearly defined.
    1015. S. NASAKA, Himalayas, Assam, Java.
    1016. S. AMBA, Burma, Malay Peninsula.
  b. Male, upperside, hindwing with the blue coloration spread over the entire surface; both sexes, underside, with the markings much broader, more irregular, and less distinct.
    1017. S. CHANDRANA, Himalayas, Assam, Upper Burma.
B. Male, upperside, both wings shining light silvery blue.
    1018. S. VIRGO, Sikkim.

1015. **Sinthusa nasaka**, Horsfield.

Thecla nasaka, Horsfield, Cat. Lep. E. I. Co., p. 91, n. 23 (1829); *Deudorix nasaka*, Hewitson, Ill Diurn. Lep., p 24, n. 21, pl. v, figs. 45, 46, *male* (1863); *Hypolycæna nasaka*, Moore, Proc. Zool. Soc. Lond., 1882, p. 249; id., de Nicéville, Journ. A. S. B., vol. lii, pt. 2, p 77, n. 17, pl. ix, fig. 2, *female* (1883); *Sinthusa nasaka*, Moore, Journ. A S. B., vol. liii, pt. 2, p. 34 (1884).

HABITAT: Kangra District, Kulu Valley, Sikkim, Assam, Java.

EXPANSE: ♂, 1·00 to 1·15; ♀, 1·25 inches.

DESCRIPTION: "MALE. UPPERSIDE, *both wings* deep blackish-brown. *Forewing* with a shade of dark blue from the base to the middle, which only appears in a certain light. *Hindwing* narrow and somewhat lengthened, with a slight oblong excavation along the posterior margin, succeeded by an obtusely-rounded tooth exterior of the caudal appendage; covered with a rich cyaneous tint excepting the exterior [costal] and interior borders; the latter is gray, and constitutes a canal to receive the abdomen. UNDERSIDE, *both wings* gray with pale ochraceous-brown posterior borders, spreading over the tip and more intensely-coloured exteriorly; a narrow delicately-striped band, consisting of two parallel brown strigæ edged with white and an intermediate yellow thread, which is more distinct in the hindwing, extends across the middle of both wings, being regular in the former and somewhat interrupted in the latter, until it reaches the anal region, where it passes, after an abrupt curve, irregularly flexuose to the inner margin; on the disc of each wing stands a short transverse double litura. *Hindwing* has the anal appendage oblong, black on the surface, fringed with gray, and has adjoining to it, in the posterior margin, two ocellate spots of more than usual size, the exterior one presenting a regularly orbicular black spot in place of a pupil, and being bounded exteriorly by a narrow pale rufous ring, a more saturated narrow rufous arc forming the interior iris; this is continued in form of a narrow band in an oblique course through the middle of the adjoining spo to the anal appendage, from whence it rises again for a short distance along the extreme angle of the wing, being edged exteriorly by a black streak covered with greenish-silvery irrorations; an obsolete series of three successively paler black lunules, of which the first is covered with a silvery crescent, stands exterior to the large ocellus in close contact with the posterior margin. *Head* and *body* brown above. *Thorax* covered with lax white hairs. *Abdomen* with shorter yellowish hairs underneath. *Antennæ* banded with white and tipt with rufous." (*Horsfield*, l. c.) Described from a single specimen.

"MALE. Differs from Horsfield's description on the UPPERSIDE of the *hindwing* in that the cyaneous colour is placed broadly on the outer margin, extending upwards towards the middle of the wing between the third median nervule and the subcostal nervure, not as stated by Horsfield covering the hindwing 'excepting the exterior and interior borders.' Hewitson's figure shows the hindwing entirely covered with the blue colour. [In specimens from Sikkim the blue colour pervades all the hindwing as described by Horsfield and figured by Hewitson, it is only restricted in specimens from the Western Himalayas.] *Forewing* furnished on the underside with a bunch of long black hairs attached to the inner margin near the base and folded beneath *Hindwing* with a corresponding cup-like depression on the underside, marked on the upperside by a shining bare round patch near the costal base of the wing and covered by the forewing A male from Sikkim differs from specimens taken in the Kulu Valley in the ground-colour of the underside being much darker and of a cupreous purple shade. FEMALE UPPERSIDE, *both wings* glossy fuliginous, paler on the disc of the *forewing*. *Hindwing* with a conspicuous black spot on the margin between the first and second median nervules, marked anteriorly with scattered white scales, which also appear decreasingly in the two next interspaces beyond and in the one before that containing the black spot, a fine marginal white line not reaching the outer angle, then a black line; the *cilia* white between the tail and the discoidal nervule; the anal lobe with an ochreous and metallic green spot, *tail* black with a white tip. UNDERSIDE, *both wings* agreeing in the ground-colour with N.-W. Himalayan specimens."

"The single female described above was taken at a low elevation in Sikkim in October." (*de Nicéville*, l. c.)

Mr. Moore says that specimens from the Kangra Valley are "identical with Javan type." In my long series of specimens I find considerable variation: those from the Western Himalayas have the ground-colour of the underside much paler and all the markings less prominent than those from the Eastern Himalayas; the size of the black spot on the underside of the hindwing near the margin in the first median interspace is very variable, being in some specimens obsolete, in others very large, broadly surrounded with orange; and there are many other minor differences. The black portions of the wings on the upperside are beautifully glossed with golden bronze in some lights. *S. nasaka* appears to be nowhere common, though Mr. A. Grahame Young has obtained several specimens in the Kulu Valley, Mr. Otto Moller possesses specimens of both sexes taken in March and June, and the Rev. Walter A. Hamilton has sent it to me from Shillong.

1016. **Sinthusa amba**, Kirby.

Hypolycæna amba, Kirby, in Hewitson's Ill Diurn. Lep, Suppl., p. 32, n. 25, pl vb figs. 44, 46, *male*; 45, *female* (1878); *Sinthusa amba*, Distant, Rhop Malay., p. 461, n 1, pl. xliv, figs 12, *male*, 19, *female* 1885); id., Doherty, Journ A. S B., vol lviii, pl. 2 p (1889).

HABITAT: Mergui, Myitta, Burma; Malacca, Perak, Malay Peninsula.

EXPANSE: ♂, ♀, ·9 to 1·0 inch.

DESCRIPTION: "MALE. UPPERSIDE, *forewing* dark brown, glossed with purplish-blue to beyond the middle, except along the costa, the blue portion of the wing terminating behind in a regular curve. *Hindwing* more brilliantly glossed with rich purplish-blue, costa and inner margin light brown. The purple of the wings is edged with black towards the costa, and it terminates towards the inner margin in a narrow detached purple stripe ending just outside the anal spot, and edged on both sides with black. *Cilia* and the short and slender *tail* are black, the anal lobe is black, dusted with sky-blue in the middle, and marked with an orange spot on its inner edge. UNDERSIDE, *both wings* dull bluish-grey; shading into rufous-brown on the hind margins, two parallel dashes of the same colour at the end of the cells, and two narrow black lines filled up with orange crossing the wings beyond the middle, on the forewing they are nearly straight, and on the hindwing irregular, forming a right angle towards the anal angle, above which, near the middle of the inner margin, is a blackish spot. *Hindwing* with the anal and caudal spots deep black, bordered within with orange and outside by a light grey line, and there are some indistinct dark submarginal markings above them. The neighbourhood of the anal spots is irregularly dusted with silvery blue. FEMALE. UPPERSIDE, *both wings* rufous-brown. *Forewing* with the marginal third darker. *Hindwing* with the hinder half of the hind margin bluish-white, intersected by a narrow black line at the base of the cilia; within this line are three black spots between the nervules, preceding the anal spot; the markings towards the anal angle do not differ from those of the male. UNDERSIDE, *both wings* as in the male. *Cilia* white. *Antennæ* ringed with black and white, the club black, tipped with orange, and preceded (in the female only) by a long white spot on the underside."

"Not closely allied to any known species." (*Kirby*, l. c.) With regard to this last remark, Mr. Kirby could hardly have known of the existence of *S. nasaka*, Horsfield, to which this species is evidently very closely allied. I include it amongst the Indian species of the genus on the strength of specimens obtained by Mr. Doherty at Myitta, in the Tenasserim Valley, and at Mergui, Burma, in the cold weather. Mr. Doherty remarks of it "Distinguished from *S. nasaka* by the richer blue of the forewing, and the much broader blue area of the hindwing. I am uncertain as to the position of the genus. It may possibly be better placed next to *Hypolycæna*, Felder." I have not seen a specimen of the species.

1017. **Sinthusa chandrana**, Moore.

Hypolycæna chandrana, Moore, Proc. Zool Soc. Lond., 1882, p. 249, pl. xi, figs. 2, 2*a*, *male*; id., de Nicéville, Journ. A. S. B., vol. lii, pt. 2, p. 78, n. 18, pl. ix, fig. 1, *female* (1883); *Chliaria chandrana*, Moore, Journ. A. S. B., vol. liii, pt. 2, p. 33 (1884); *Hypolycæna grotei*, Moore, Proc. Zool. Soc. Lond., 1883, p. 527, pl. xlix, fig. 5, *male*, *Sinthusa grotei*, id., Journ. A. S. B., vol. liii, pt. 2, p. 34 (1884).

HABITAT: Himalayas, Assam, Upper Burma.

EXPANSE: ♂, ♀, 1·0 to 1·3 inches.

DESCRIPTION: "Allied to *H.* [= *S.*] *nasaka*, Horsfield. MALE. UPPERSIDE, *both wings* violet-brown. *Forewing* with the lower basal and discal areas dull violet-blue, and the medial area of the *hindwing* purplish violet-blue; marginal line and anal lobe black. UNDERSIDE, *both wings* olive-grey. *Forewing* with a broad disco-cellular slenderly-black-lined white-bordered streak, a similar broken discal band and a similar marginal narrower lunular band. *Hindwing* with a similar disco-cellular streak, a discal band, which is broken beyond the cell and bent upwards above the anal angle, and a marginal dentated band ending in a large red spot and the anal lobe and an intervening streak, the spot and the anal lobe black-centred, the streak with metallic-green borders; a white-bordered black spot on the costa near the base, another at the end of the cell, and a less distinct spot above the anal angle. *Cilia* whitish." (*Moore*, l. c. in Proc. Zool. Soc. Lond., 1882.) "FEMALE UPPERSIDE, *both wings* dull uniform fuliginous, the anal lobe (as in the male) black with an ochreous and metallic green spot. UNDERSIDE, *both wings* paler than in the male, being almost pure white, the markings similar but also paler and more diffused."

"This species is very near to the Javan *Thecla malika*, Horsfield (Cat. Lep. E. I. Co., p. 90, n. 22, 1829)." (*de Nicéville*, l. c.) It is glossed with golden bronze above as in *S. nasaka*.

Mr. Moore in describing this species says that it is allied to the *Thecla nasaka* of Horsfield. Necessarily so, as the two species are in the same genus, but he should have said how his species differs from the *Thecla malika* of Horsfield. The name "*chandrana*" is based on a misconception; it is evidently derived from the name of the river Chandra which runs through Lahoul, the habitat given for the species, which never could have come from there, the *Sinthusa* being forest-haunting species, and Lahoul being bare of trees. The type specimens of *S. chandrana* were probably captured by Mr. A. Grahame Young in South Kulu at 5,000 feet elevation, and given by him to the Rev. H. Hocking, who as usual did not ticket the specimens. I have no hesitation in placing Mr. Moore's species "*H.*" *grotei*, described from "N.-E. Bengal," as a synonym of *S. chandrana*, as I find from the long series of this species that I possess that the typical Western Himalayan form (*chandrana*) runs into and is found with the typical Eastern Himalayan form (*grotei*). Lastly Mr. Moore in 1884 placed *chandrana* in his new genus *Chliaria*, but this is clearly incorrect, because *Chliaria* has two subcostal nervules to the forewing while *chandrana* has three, and two tails to the hindwing while *chandrana* has but one.

I find that *S. chandrana* is one of the most variable of the *Lycænidæ*. In the Western Himalayas, from whence I have the fewest specimens, it appears to be fairly constant, the catenulated bands of the underside narrow and clearly defined. It is in Sikkim and Assam that the species varies so much. Here typical *chandrana* is occasionally met with, but the more common form has the bands of the underside much broader, often more or less confluent, very prominent, and the ground-colour much darker. The females show extraordinary variability on the upperside. Some specimens are entirely glossy fuliginous-black, with some obscure irrorated white patches between the veins near the outer margin of the hindwing; others have a small whitey-ochreous patch on the forewing, with the white on the hindwing more developed; others have a large whitey-ochreous patch on the forewing, the outer half of the hindwing also white; lastly Mr. Moller possesses a very aberrant Sikkim specimen in which there is a bright ochreous somewhat large oval patch on the disc of the forewing, the hindwing unmarked. Mr. P. W. Mackinnon possesses a most typical specimen of *S. grotei* taken by himself in the Dehra Dun at the end of July. In Sikkim *S. chandrana* occurs from March to May and again in September, but is by no means a common species, at Shillong it occurs in March, and from July to September. I possess a single specimen from Tsenbo, Upper Burma, taken by Major Adamson in May.

I think it probably that the "*Thecla*" *pratti* of Leech, Trans. Ent. Soc. Lond., 1889, p. 110, n. 49, pl. vii, fig. 4, *male*, from Foochau and Kiukiang in China, will hereafter be shewn to be a synonym of *S. chandrana*.

I append as foot-notes descriptions of *S. malika*, Horsfield, and *S. grotei*, Moore.*

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* *Sinthusa malika*, Horsfield. *Thecla malika*, Horsfield, Cat. Lep. E. I. C., p. 90, n. 22 (1829); *Dipsas malika*, Horsfield and Moore Cat. Lep. Mus. E. I. C., vol. i, p. 37, n. 43, pl. ia, fig. 5, *male* (1857); *Myrina malika*, Hewitson, Ill. Diurn. Lep., p. 37, n. 34, pl. xv, figs. 41-43, *male* (1863); HABITAT: Nias Island, Sumatra, Java. EXPANSE: *Male*, 1·1 inch. DESCRIPTION: "MALE UPPERSIDE, *both wings* deep blackish-brown. *Forewing* with a shade of dark blue from the base to the middle, which only appears in a certain light. *Hindwing* narrow and somewhat lengthened, with a slight oblong excavation along the posterior margin, succeeded by an obtusely rounded tooth exterior of the caudal appendage; covered with a rich cyaneous tint excepting the exterior and interior borders; the latter is gray, and constitutes a canal to receive the abdomen. UNDERSIDE, *both wings* white with a bluish shade; a short brown streak, transversely truncated at each end, stands a little before the disc. *Forewing* with a yellowish brown, somewhat cupreous posterior margin, spreading along the tip; a transverse [discal] striga of six or seven oblong subconfluent dots, which is interrupted on the disc, the continuation from the medial area being somewhat posteriorly disposed. *Hindwing* with a similar series at a corresponding distance from the base, consisting of oval dots disposed in interrupted and somewhat unequal pairs, passing in an irregular curve across the wing, the terminal streak at the inner margin being transversely disposed, oblong and larger than the others; along the posterior margin passes a series of dots, decreasing successively in size and strength of tint from the outer apical angle towards the caudal appendage, being confined internally by an undulated brown band; of two ocellate spots in the anal region, the exterior one is bedded in an irregular rufous patch, which has an undulated interior margin, and tapers off at each extremity in a short striga; the interior one, situated on the anal appendage itself, is surrounded by a white cilia, the intermediate space being occupied by a greenish metallic spot, and the oblong portion of the anal angle is marked by a black stripe covered by a branch from the rufous band. *Body* dark blackish-brown, *eyes* bordered by a white streak, *antennæ* black annulated with white and terminated by a grayish tip." (*Horsfield*, l. c.) Described from a single specimen.

Sinthusa grotei, *Hypolycæna grotei*, Moore, Proc. Zool. Soc. Lond., 1883, p. 527, pl. xlix, fig. 5, *male*; *Sinthusa grotei*, Moore, Journ. A. S. B., vol. liii, pt. 2, p. 34 (1884). HABITAT: N.-E. Bengal.

I also give a description of *S. amata*, Distant, which has been described from the Malay Peninsula; it not improbably will hereafter be found to be but a variety of *S. malika*, Horsfield.*

1018. **Sinthusa virgo**, Elwes. (FRONTISPIECE, Fig. 134 ♂).

Hypolycæna virgo, Elwes, Proc. Zool. Soc. Lond., 1887, p. 446; *Hypolycæna (? Sinthusa) virgo*, id., Trans. Ent. Soc. Lond., 1888, p. 396, n. 309, pl. viii, fig. 7, *female*.

HABITAT: Sikkim.

EXPANSE: ♂, 1·35; ♀, 1·40 to 1·50 inches.

DESCRIPTION: "FEMALE. UPPERSIDE, *forewing* black, with a large discal patch of French-grey extending to the hind margin inwardly. *Hindwing* grey powdered with black, and becoming dull black on the costal margin, with a single narrow black *tail* tipped white, and a small fuscous lobe at the anal angle. *Cilia* white, narrow towards the apex of the forewing. UNDERSIDE, *both wings* bright French-grey. *Forewing* with a distinct transverse sinuous yellowish band, narrowly edged black on both sides about two-thirds of the length, not extending quite to the hinder margin; a short double-lined bar at the end of the cell, and an indistinct outer band near the edge. *Hindwing* with similar bands, of which the first extends in the usual broken W to the inner margin, and in addition a short band of three blackish spots within the discal bar; at the anal angle two blue spots, of which the outer is half black. *Antennæ* ringed black and white, with a fuscous tip to the club. *Body* above black, with grey hairs; pale grey beneath."

"Described from a single perfectly fresh female, which I took on May 27th, 1886, in the same place as *Chilades* [*Orthomiella*] *pontis*, mihi. Though I visited the spot on several occasions, I never saw another, and the male will probably be found earlier in the season. Notwithstanding the very numerous species of this group of *Lycænidæ* which have been described from Sikkim, I think this is so well distinguished by the pattern of the underside that it cannot be the female of any known species." (*Elwes*, l. c. in Proc. Zool. Soc. Lond.)

MALE. UPPERSIDE, *both wings* shining light blue; *cilia* white, but becoming dusky towards the apex of the forewing, tipped with black on the anal lobe. *Forewing* with the costa as far as the subcostal nervure, the outer margin broadly, the apex still more broadly black. *Hindwing* with the costa very broadly black, the abdominal margin whitish, an anteciliary fine black line, the veins outwardly more or less broadly bordered with black; *tail* black, tipped with white. UNDERSIDE, *both wings* bluish-white, an indistinct

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EXPANSE: *Male*, 1·0 inch. DESCRIPTION: "Allied to *H.* [=*S.*] *nasaka*, Horsfield, and *H. chandrana*, Moore. [MALE.] UPPERSIDE, *both wings* dark brown, lower discal areas violet-blue. UNDERSIDE, *both wings* brownish-grey. *Forewing* with a white-bordered brown band crossing the end of the cell, a broken similarly-bordered discal band, and a marginal row of lunular spots. *Hindwing* with a white-bordered black subbasal anterior spot, and [one] two [or three] similar spots in the middle of the cell, a white-bordered brown band at the end of the cell, a broken zigzag similar discal band, and a marginal upper row of five annular spots; the three lower marginal spaces ochreous-red, the anal and third with a black medial spot, and the middle with a silver streak, these three anal spaces being bordered above by a silver line." (*Moore*, l. c. in Proc. Zool. Soc. Lond.) The alliances of this species are obvious enough; it would have been more useful had Mr. Moore stated how *S. grotei* differs from *S. chandrana*. The locality given for the species is extremely vague.

* *Sinthusa amata*, Distant, Rhop. Malay., p. 461, n. 2, pl. xliv, fig. 20, *female* (1885). HABITAT: Penang. EXPANSE: *Female*, ·95 of an inch. DESCRIPTION: "FEMALE. UPPERSIDE, *both wings* dark brown. *Hindwing* with an anal angular pale greyish patch with a violaceous tinge;—the patch is narrower and extends farther upwards than in *S. amba*, Kirby, and is separated from the posterior margin; *tail* greyish-white with a black medial line. UNDERSIDE, *both wings* pale greyish. *Forewing* with the apex and outer margin ochraceous; and with two ochraceous fasciæ, the first short at the end of the cell, the second much dislocated, and almost crossing the wing beyond the cell. *Hindwing* with a short disco-cellular fascia at the end of the cell, followed by a curved series of seven spots crossing the wing, and an oblong spot at the anal angle,—all these spots dark ochraceous, margined with blackish,—two broken and obscure dark narrow marginal fasciæ, a black spot with some metallic bluish scales between the two lower median nervules, and another spot almost entirely metallic bluish at the anal angle, both these spots being inwardly margined with ochraceous. *Body* and *legs* more or less concolorous with the wings." (*Distant*, l. c.) Probably described from a single specimen. The discal band on the underside of the hindwing being broken up into well-separated spots appears to be the chief characteristic of the species. This is also a noticeable feature in *S. malika*, Horsfield, but in that species the spots are all very small and well-separated according to the figures of it, and there is a prominent series of marginal spots to the hindwing from the third median nervule to the apex, which appear to be entirely absent in *S. amata*. Both species appear to have the apex and outer margin of the hindwing on the underside differently coloured from the rest of the wing, in *S. chandrana*, Moore, the ground-colour is the same throughout.

submarginal dusky band, a discal macular broken ochreous band outwardly defined finely with black, a short similar band on the disco-cellular nervules. *Forewing* with the discal band composed of three distinct portions, the upper composed of three spots, the middle of two, which are shifted a little inwards, the lower portion of one spot also shifted inwards, placed in the submedian interspace. *Hindwing* with the discal band composed of three pairs of spots from the costa, then three or four single spots recurved to the abdominal margin; the inner portion of the submarginal band bearing a bright yellow line from the second median nervule to the abdominal margin, the anal lobe black, a small round black spot on the margin in the first median interspace surrounded with brilliant metallic blue scales, a few of these scales in the submedian interspace. *Body* black above, bluish-white below.

Described from a single example obtained by Mr. A. V. Knyvett on Observatory Hill, 7,500 feet, in the station of Darjiling, on the 20th June, 1888. The markings of the underside are remarkably like those of a *Chliaria*, but the species has only one tail, and an additional subcostal nervule to the forewing.

The figure shews both sides of the male above described in the collection of Mr. A. V. Knyvett. Since the above was written, Mr. Knyvett has obtained a second male specimen, which he has generously presented to me, Mrs. Wylly has captured a single female, which now adorns my collection, and Mr. H. J. Elwes kindly sent me out the type specimen to examine.

The eleventh division that I have made in the Indian *Lycænidæ* I have called the *Liphyra* group. It contains a single most anomalous genus, which has four subcostal nervules to the forewing in both sexes, as in the Indian genera *Zarona*, mihi, and *Dacalana*, Moore. It is also the giant of the family, the wings expanding over three inches. It is quite an ugly butterfly, but makes up for its want of beauty by its extreme rarity and its interesting structure. It occurs in Sikkim, Assam, the Malay Peninsula and Archipelago.

Genus 176.—LIPHYRA, Westwood. (PLATE XXIX).

Liphyra, Westwood, Proc. Ent. Soc. Lond., third series, vol. ii, p. 31 (1864); id, Distant, Rhop. Malay., p. 204 (1884); *Stirosis*, Felder, Reise Novara, Lep., vol. ii, p. 219 (1865).

"BODY, short, thick; *head* medium; *eyes* large [smooth]; *palpi* minute, oblique, scarcely visible from above, the last joint oval, the apex acute; *antennæ* straight, the apical half gradually clavate; *legs* very short, thick, all six equal, perfect, the tibiæ all without spurs, the claws of the tarsi entire, not bifid, the pseudonychiæ conical, the pulvillus subbilobate. WINGS, large, obtuse, without tails. FOREWING, with the *subcostal nervure* four branched, two branches before the apex of the discoidal cell, and two others equi-distant between the cell and the apex; *discoidal cell* closed. HINDWING, with the *costal margin* angulate; *discoidal cell* terminated in an acute angle." (*Westwood*, l. c.)

"HEAD rather large. *Palpi* scaly, rather slender, with the second joint very slightly extending in front of the head. *Antennæ* very thick, rather short, gradually thickened. WINGS with large wide-spread scales, even and not tailed, quite entire, with rather long *cilia* (especially to the hindwing at the anal angle). FOREWING, with a rather narrow *discoidal cell*, reaching beyond half way up the costa, with the *costal margin* very straight, especially at the base; with the *costal nervure* very straight, the *subcostal* nervure closely approaching to it, four-branched (in the female), with the third and fourth branches emitted at some distance beyond the end of the cell, the terminal part of this nervure running out to the exterior, *i.e.*, apical margin; with the superior [*upper*] *discoidal nervule* arising from the subcostal nervure beyond the end of the cell, the inferior [*lower discoidal*]—very close to the discoidal fold which is very well defined—issuing from almost the middle of the transverse [disco-cellular] nervule. HINDWING, very much folded along the internal margin, and covered densely above with scaly hairs; with the *costal margin* scarcely two-thirds the length of the internal margin, the *internal* margin very sinuate below the middle; with the *costal nervure* very straight after its basal curvature, ending at the very apex of the costal margin; the *discoidal cell* *reaching the middle of the wing, much produced at its inferior* [lower] *angle* ; *the first subcostal nervule* rather close to the end of the cell ; the primary [*costal*] *nervure* bent at its origin ; the *median* nervure distinctly bent at the origin of the second branch. *Thorax* slightly convex ; *abdomen* (of the female) rather short and very stout ; *legs* short, very thick, hind tibiæ nearly equal to the femora, hind tarsi very stout, shorter than the tibiæ."

"The most remarkable form in the family, owing to the extraordinarily powerful structure which distinguishes all the parts ; it reminds one of the *Castniidæ* in respect to the scales, however it is most nearly allied to the genus *Amblypodia*, Horsfield." (*Felder*, l. c.)

"BODY, very short and robust ; *legs* robust ; *eyes* large ; *palpi* minute ; *antennæ* gradually thickened from the middle to the apex. FOREWING, subtriangular, *costal margin* oblique and slightly arched ; *outer* margin convex ; *inner* margin sinuated and coarsely hirsute ; *costal nervure* extending to about the middle of the costal margin ; *first subcostal nervule* emitted a little distance beyond the middle of the cell, *second* subcostal emitted at about half the distance from the apex of the cell as its base is from that of the first subcostal ; *third* and *fourth* subcostals bifurcating at about one-third the distance between the end of the cell and the apex of the wing ; base of the *upper discoidal* nervule united with the subcostal nervure a little beyond the end of the cell ; *disco-cellular* nervules robust, slightly concave. HINDWING, somewhat elongately ovate ; *posterior margin* rounded and convex ; *costal nervure* extending to about the apex of the wing ; *first subcostal nervule* emitted at about one-third before the end of the cell ; *discoidal cell* very broad ; *second* and *first median nervules* with their bases twice as wide apart as the distance separating the bases of the third and second "

"This unique genus is known only by one species, which is probably the largest and most robust butterfly found in the whole of the *Lycænidæ*. Its geographical area can at present be only estimated by that of its sole representative." (*Distant*, l. c.)

In the forewing the costa is gently arched, the outer margin from the apex of the wing to the termination of the third median nervule is almost straight, very slightly convex, then in the male cut out between the apices of the third and first median nervules, then straight to the anal angle, in the female the outer margin is slightly convex from the apex of the third median nervule to the inner angle ; inner margin slightly bowed outwards near the base ; the costal nervure terminates well beyond the apex of the discoidal cell, the second subcostal nervule has its base about equidistant between the bases of the first subcostal and upper discoidal nervules, the third subcostal has its origin exactly midway between the base of the first subcostal nervule and the apex of the wing, the fourth subcostal is short and originates midway between the base of the third subcostal and the apex of the wing ; the terminal portion of the costal nervure ends on the outer margin below the apex of the wing ; the upper discoidal nervule is given off from the subcostal nervure a little beyond the apex of the cell ; the discoidal cell is very narrow ; the disco-cellular nervules nearly erect, but the lower disco-cellular is suddenly bent outwards near its posterior end, and is rather longer than the middle disco-cellular ; the bases of the median nervules equidistant, the third from the lower end of the cell. Hindwing with the costa strongly angled one-third from the base, thence straight to the apex which is acute, the outer margin evenly rounded, the abdominal margin excavated above the anal angle, giving the wing a somewhat lobed appearance ; the discoidal cell is very broad, divided into two unequal portions, the anterior the smaller, by a strong fold which joins the upper disco-cellular nervule a little posterior to its middle, the upper disco-cellular very concave, a good deal shorter than the lower, which latter is strongly outwardly oblique ; the second median nervule has its origin a little before the lower end of the cell.

Professor Westwood and Dr. Felder in their original diagnoses of this genus distinctly say that there are four subcostal nervules (with both of whom I agree in not counting the terminal portion of the subcostal nervure as an additional subcostal nervule) to the forewing, while Mr. Distant (Rhop. Malay., p. 197), who counts the terminal portion of the subcostal nervure as an additional subcostal nervule, says there are four only instead of five as there are clearly in both sexes if the terminal portion be counted. This character is only possessed, as far as I know, by the genera *Zarona*, mihi, *Dacalana*, Moore, and *Deramas*, Distant, but of the last one sex (the male) only is known. The males of the genera *Amblypodia*, Horsfield, *Iraota*, Moore, *Zesius*, Hübner, and *Neocheritra*, Distant, all have four subcostal nervules, but the females have only three. The origin of the upper discoidal nervule of the forewing from the subcostal nervure *beyond* the apex of the discoidal cell occurs in both sexes of six genera only of Indian *Lycænidæ*, and in the male only of one other genus. The great size of the only known species of the genus, which is the giant of the *Lycænidæ*; its extremely short and robust abdomen, which, in the dry insect, hardly reaches beyond half the abdominal margin of the hindwing; the minute palpi; the thick, short legs; the very robust antennæ; the coarseness of the scales on the wings; and lastly the very moth-like appearance of the insect altogether render it quite unique amongst Indian *Lycænidæ*. It is extremely rare, though its range is very great, and nothing is known, I believe, about its habits or life-history.[*]

1019. **Liphyra brassolis**, Westwood. (*PLATE XXIX, FIG. 243 ♀*).

L. brassolis, Westwood, Proc. Ent. Soc. Lond., third series, vol. ii, p. 31 (1864); idem, id., Trans. Ent. Soc. Lond., 1888, p. 470, n. 11, id., Butler, Trans. Linn. Soc. Lond., Zoology, second series, vol. i, p. 546, n. 1 (1877); id., Distant, Rhop. Malay., p. 204, n. 1, pl. xxii, fig. 18, *female* (1884); id., Staudinger, Ex. Schmett., p. 269, pl. xciv, *male* (*nec* female) (1888); *Sterosis robusta*, Felder, Reise Novara, Lep., vol. ii, p. 219, n. 237, pl. xxvii, figs. 10, 11, *female* (1865).

HABITAT: Assam, Singapore, Northern Celebes (*Westwood*); Dodinga, Halmaheira (= Gilolo), (*Felder*); Sarawak (Borneo), Sikkim (*Coll. Hewitson*); Malacca (*Butler*); Sungei-Ujong, Malay Feninsula (*Holland*).

EXPANSE: ♂, ♀, 2·7[†] (*Distant*), 3·25 (*Westwood*), 3·05 (*Felder*), 3·10, Sikkim and Assam specimens.

DESCRIPTION: MALE. "Fuscous. *Forewing* black, a large hastate interno-basal patch, and a small subquadrate discoidal spot fulvous. *Hindwing* fulvous, with the border and four small spots on the disc black."

"This species, although presenting all the general appearance of a species of the Brazilian genus *Brassolis*, Fabricius, in its robust body and wings and in the coloration of the latter belongs to the *Lycænidæ*, having the veins of the forewing arranged as in [the male of] *Amblypodia* [*Iraota*] *timoleon*, Stoll." (*Westwood*, l. c.)

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[*] Mr. Doherty in a paper to be published hereafter describes the egg of *Liphyra* as follows:—"Very unlike that of other *Lycænidæ*, but shows an unexpected resemblance to that of *Logania*, Distant, and *Taraka*, Doherty, MS. It is of great size, green, overlaid with white, shaped something like a section or "drum" of a Doric column, but somewhat widest at the base, the height, breadth at apex, and breadth at base being to each other as 9, 13, and 15½. The top is marked with hexagonal reticulations, the lines turbinate in the middle, the margin deeply channelled, and then strongly carinate, the carina projecting both upwards and outwards, white, its contour even. Base also obscurely carinate. Sides crusted with white and minutely indented, with about forty-five vertical ribs, slightly irregular and even (very rarely) anastomosing, extending also over the outer part of the base, the inner part being green and minutely reticulated with hexagons. The prehensores I do not know."

"*Liphyra brassolis* flies slowly with a distinct humming sound, and an uncertain circling flight, hesitating a long time before alighting. Whether it is, as it seems, a protected species, or whether, as I believe, it flies chiefly at twilight and so escapes capture, I do not know. No one would ever take it for a butterfly; few moths are more typically moth-like in flight. It is probably the oldest type of lycænid existing, and unconnected with the rest, except through such primitive dwarf forms as *Taraka* and the smaller *Gerydinæ*. It is the only Asiatic representative of the subfamily *Liphyrinæ*, Doherty, and its nearest allies are apparently African."

Dr. W. J. Holland has kindly sent me an interesting note he published in the "Canadian Entomologist," vol. xix, p. 61 (1887), in which he suggests that the larva of *L. brassolis* is carnivorous, as a female specimen he had sent him from Sungei-Ujong in the Malay Peninsula "was covered with a whitish mealy deposit, particularly thick upon the abdomen," which substance he found on examination under a microscope to be the same as that which covered some "mealy bugs" he received at the same time, and which were caught on the same occasion as the butterfly. Dr. Holland arrives at the conclusion that his butterfly when caught "was engaged in oviposition," and that the mealy deposit "is nothing else than fragments of the white covering of the scale insects, over and among which the butterfly had been flying while engaged in the act of laying her eggs." He was led to this conclusion by the fact that *Feniseca tarquinius*, Fabricius, in America, is known in the larva state to feed on *Coccidæ*. Dr. Holland states that *F. tarquinius* is closely related to *L. brassolis* in the "form of its wings, their neuration and their colour." The neuration of the two genera is however, widely different, as *Feniseca* has only three while *Liphyra* has four subcostal nervules to the forewing.

[†] The specimen figured by Mr. Distant measures 3·15 inches in expanse.

"FEMALE. UPPERSIDE, *both wings* reddish-ochraceous. *Forewing* with a large spot occupying the apical two-thirds of the cell and extending beyond it; two large spots beneath the apex of the cell divided by the second median nervule, the apex and outer margin broadly and the inner margin narrowly for half its length fuscous or black; extreme outer margin castaneous. *Hindwing* with five discal spots, one inside and two just beyond the cell, and two divided by the second median nervule, and the posterior margin broadly and inwardly sinuate, fuscous or black; extreme outer margin castaneous; abdominal margin somewhat darker. UNDERSIDE, *both wings* paler. *Forewing* with the discal black spots present, but the apex and outer margin only mottled with brownish. *Hindwing* with the posterior two-thirds and the costal margin mottled with brownish, the black discal spots obsolete. *Body* and *legs* more or less concolorous with the wings, *eyes* black, *antennæ* brownish. MALE. UPPERSIDE, *both wings* with the black markings larger and more distinct. *Forewing* with the black markings occupying the whole of the inner margin." (*Distant*, l. c.)

Mr. Otto Moller possesses three Sikkim specimens, a male taken in August and two females, one of which was taken in July. The MALE on the UPPERSIDE of the *forewing* is black, with a small orange spot beyond the end of the cell, a large orange patch from the base occupying the lower third of the cell, the whole of the submedian interspace as far as the middle of the first median nervule, then descending obliquely to the inner margin, orange. *Hindwing* black, the costa broadly ochreous, the disc of the wing orange, bearing a large black patch almost filling the cell, two oblong ones beyond it divided by the discoidal nervule, and two others divided by the second median nervule; abdominal margin pale. FEMALE. UPPERSIDE, *both wings* orange. *Forewing* with an elongated black cell-streak touching the subcostal nervure, extending beyond the cell, narrow at the base, widening out and occupying the whole of the outer end of the narrow cell; below this streak is an irregularly oval-shaped black spot divided by the second median nervule, the outer margin broadly black, the black colour ascending a short distance up the veins, the inner margin also outwardly black. *Hindwing* with the outer margin coarsely sprinkled with black scales, a small black spot at the middle of the outer end of the broad cell, and four spots outside the cell much as in the male but smaller. The specimens figured by Felder and Distant are both females, the latter has the black markings on the upperside of the hindwing considerably reduced, and is altogether much paler than the Gilolo specimen. There is something altogether *outré* and peculiar about this species; it is not unlikely that its life history when known will be as remarkable as is the structure and general appearance of the imago.

The figure shows the upper and undersides of a female specimen from Sikkim in the collection of Mr Otto Moller.

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[Specific names are printed in small type (abdul); specific synonyms and varieties in italics (*abseus*); generic names in small capitals (ABISARA); generic synonyms in small capital italics (*AMBLYPODIA*); subfamily and family names in large capitals (CASTNIIDÆ); and subfamily and family synonyms in large capital italics (*AMBLYPODINÆ*). The number of the page on which a species or variety, genus, subfamily or family is described is printed in italics.]

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ERRATA.

Page 11, seven lines from the top, omit sentence commencing "In India" and concluding with "*Z. ziha* Hewitson"

Page 16, three lines from the top, for "*." read "†." Also eleven lines from the bottom, for "third" read "first."

Page 17, sixteen lines from the top, after "except Drina," add "and some species of *Zephyrus*"

Page 64, fourteen lines from the bottom, for "*Palpi* exactly half" read "*Antenna* exactly half."

Page 184, eighteen lines from the bottom, for "Dry-seasan," read "Dry-season."

Page 189, twenty two lines from the bottom, for "*thetys*," read "*thetis*"

Page 225 sixteen lines from the bottom, for "*Mathahala*" read "*Mahathala*"

Page 248, four lines from the top, after "**Arhopala rafflesii**, n sp," add "(FRONTISPIECE, FIG 136 ♂)." Also twenty-nine lines from the bottom, for "*adtaha*" read "*adatha*"

*Page 249, after line twenty three, from the top, add "The figure shows both sides of a male specimen from Singapore in the Raffles Museum, Singapore."

Page 340, seventeen lines from the top, for "ICITAS, read "ICETAS."

Page 363, five lines from the top, for "*lazalaria*," read "*lazularia*."

NOTE.—Volume III, containing the title page, list of Illustrations of Vol III, preface, and pp. 1—503, with Frontispiece to Vol. III, and plates XXV—XXIX, was published in February, 1890.

END OF VOL. III.

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PLATE XX

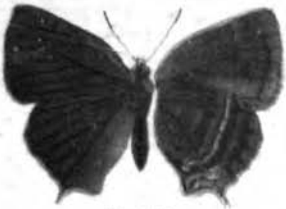
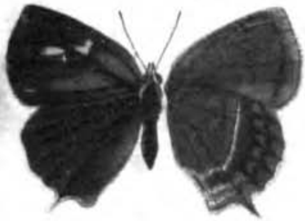


Fig. 140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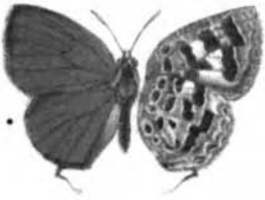
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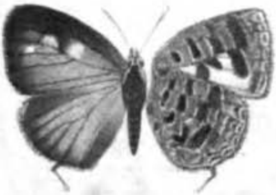
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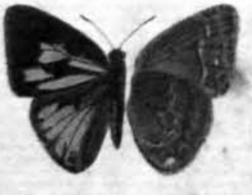
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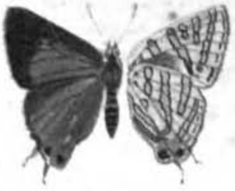
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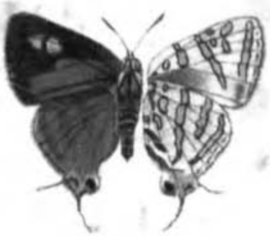
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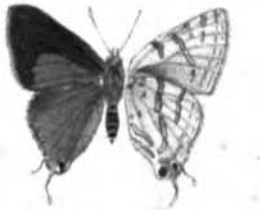
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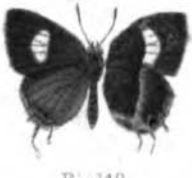
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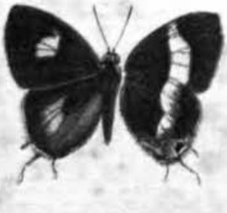
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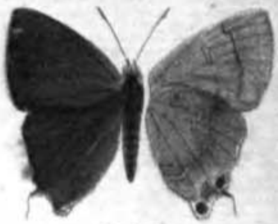
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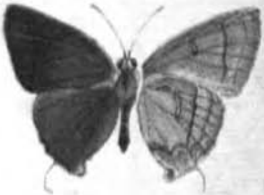
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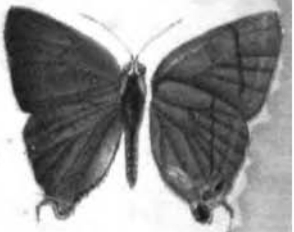
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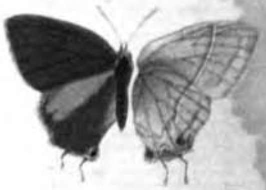
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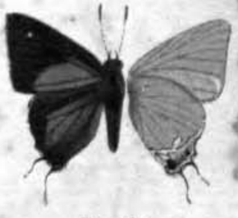
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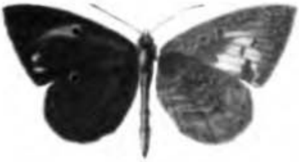
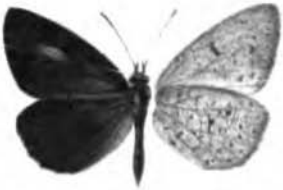


Fig. 156



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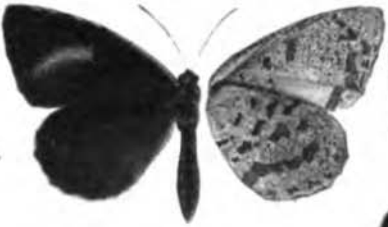

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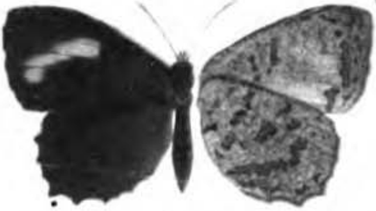
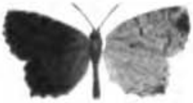


Fig. 159



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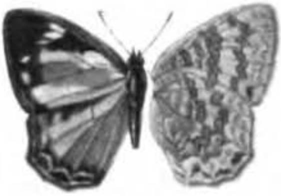
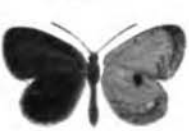


Fig. 161



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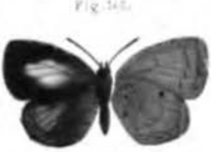

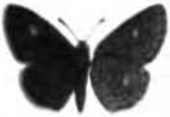

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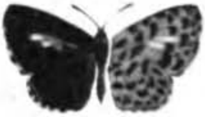

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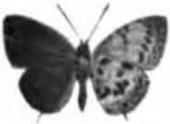

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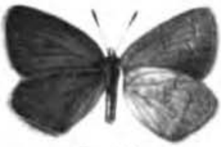

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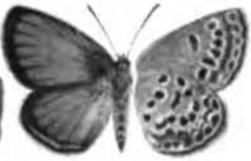

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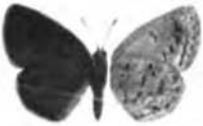

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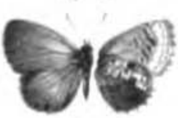

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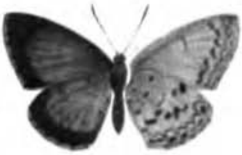

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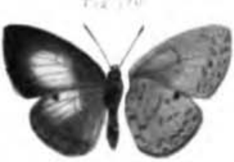

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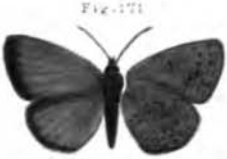

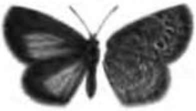

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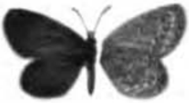

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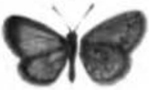

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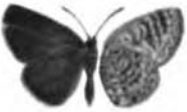

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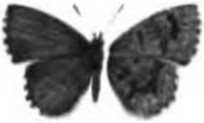

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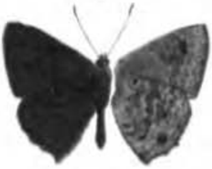

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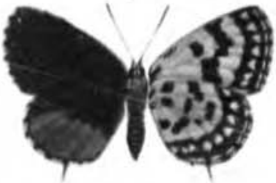

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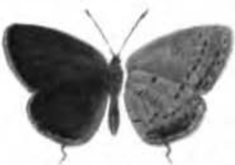

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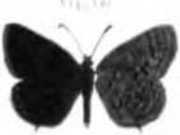

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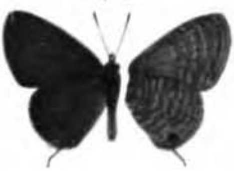

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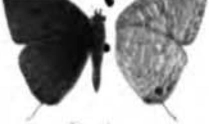

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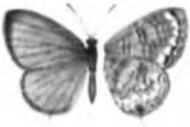

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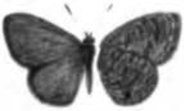

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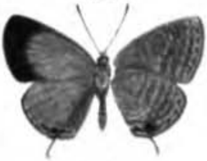

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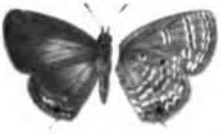

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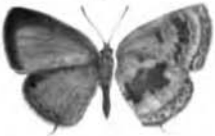

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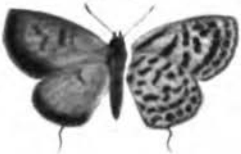

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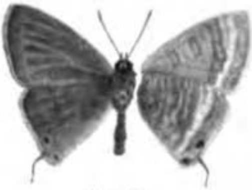

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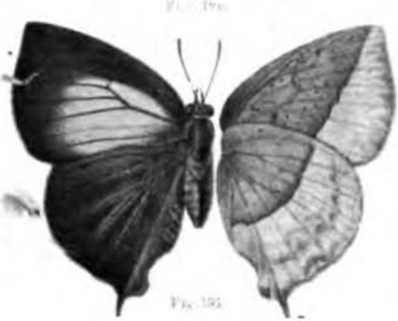

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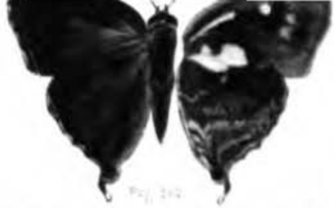

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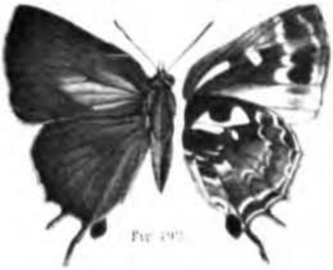

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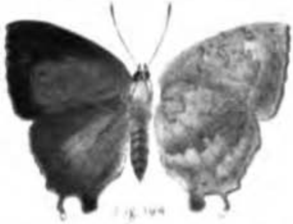

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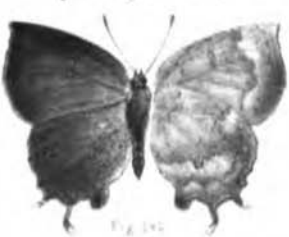

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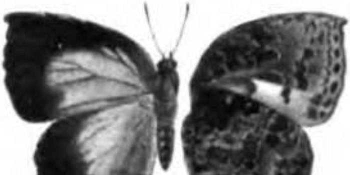

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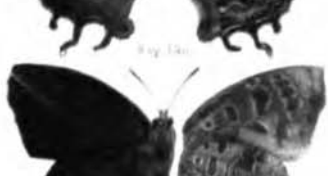

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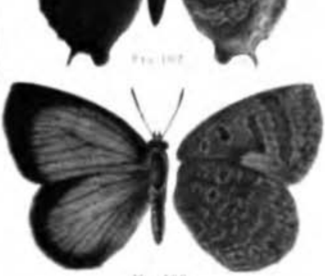

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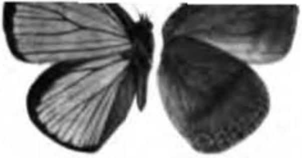

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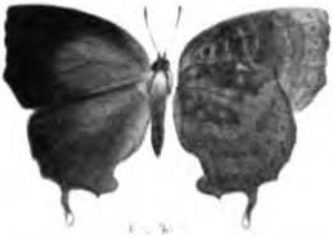

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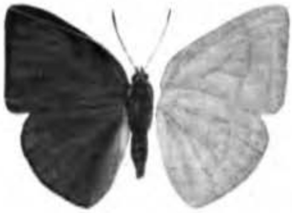

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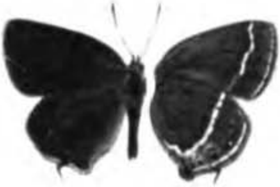

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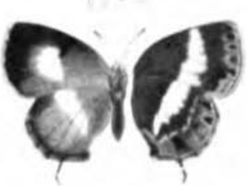

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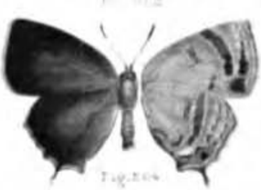

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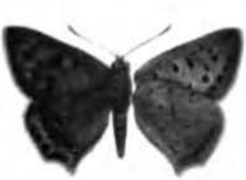

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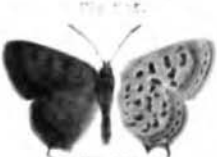

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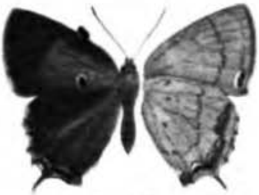
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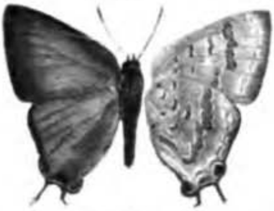
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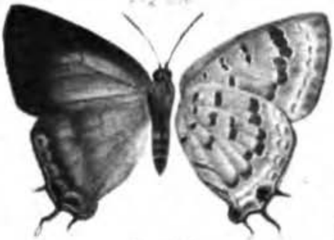
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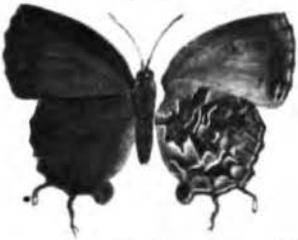
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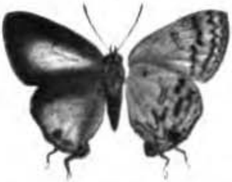
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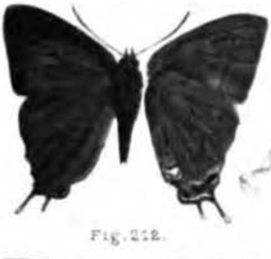
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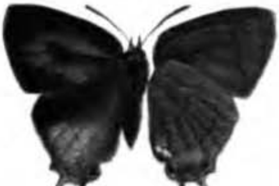

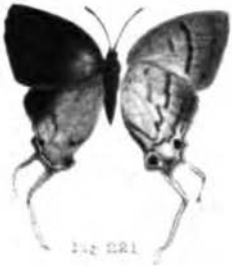
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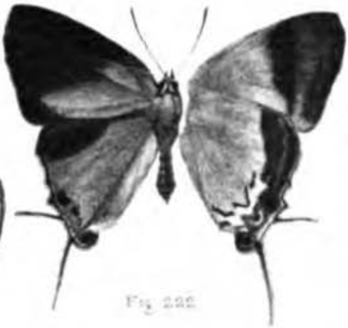
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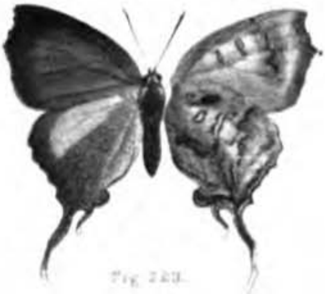
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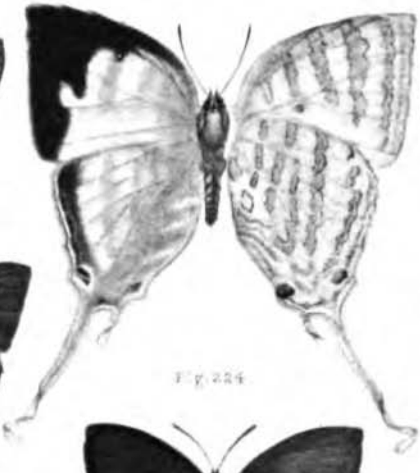
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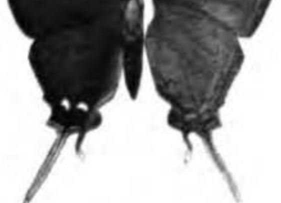

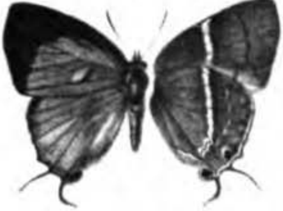
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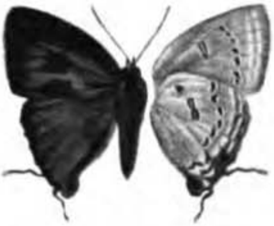
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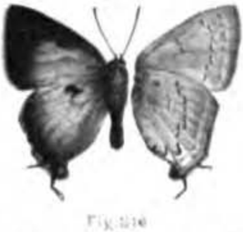
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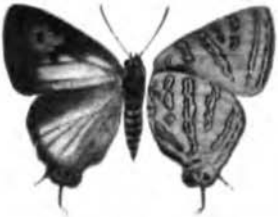
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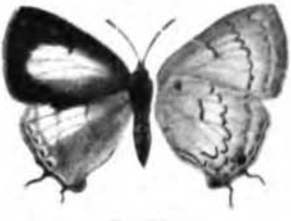
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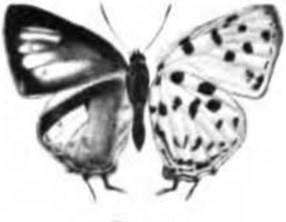
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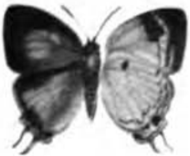


EXPLANATION OF PLATE XXIX.

Page.
FIG. 226. *Cheritra jaffra*, Butler, male 410
" 227. *Rathinda amor*, Fabricius, female 414
" 228. *Catapœcilma elegans*, Druce, female 421
" 229. *Biduanda thesmia*, Hewitson, male 426
" 230. *Drupadia boisduvalii*, Moore, male 430
" 231. *Eooxylides tharis*, Hübner, male 433
" 232. *Loxura atymnus*, Cramer, male 436
" 233. *Yasoda tripunctata*, Hewitson, female 439
" 234. " " " female 439
" 235. *Drina donina*, Hewitson, female 442
" 236. *Lehera eryx*, Linnæus, male 444
" 237. *Araotes lapithis*, Moore, male 446
" 238. *Deudorix epijarbas*, Moore, male 449
" 239. *Zinaspa distorta*, de Nicéville, male 452
" 240. *Hysudra selira*, Moore, male 454
" 241. *Rapala tara*, de Nicéville, female 457
" 242. *Bindahara areca*, Felder, male 474
" 243. *Liphyra brassolis*, Westwood, female 491

(P.R. 275)

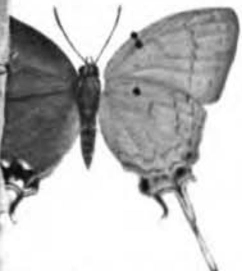
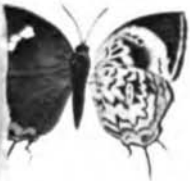


Fig. 226



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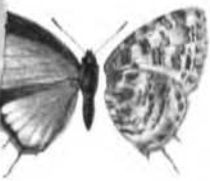

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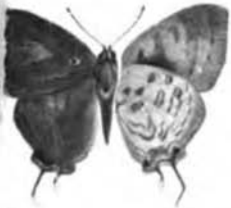

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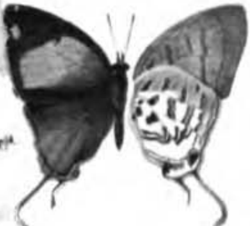

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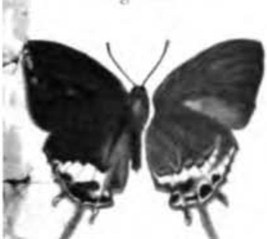

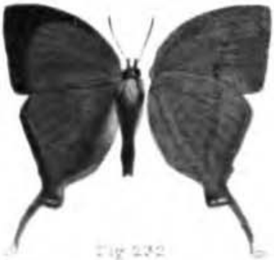

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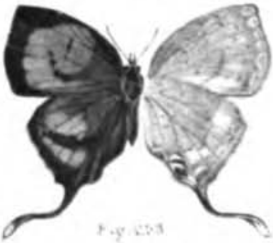

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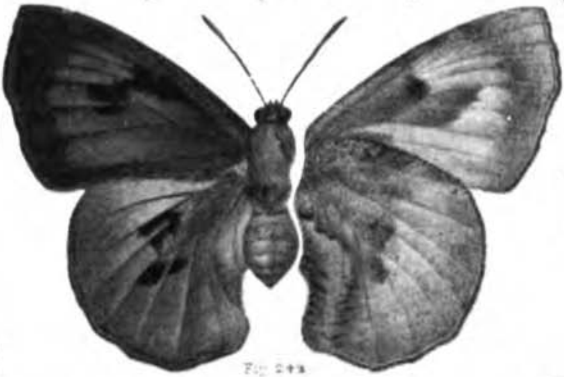

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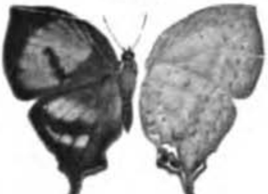

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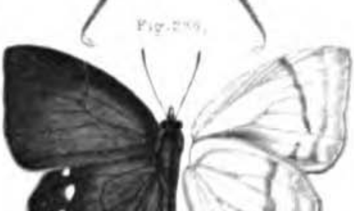

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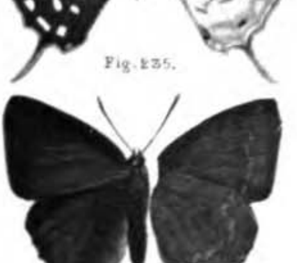

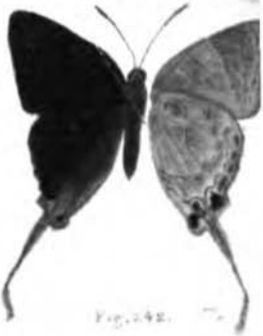

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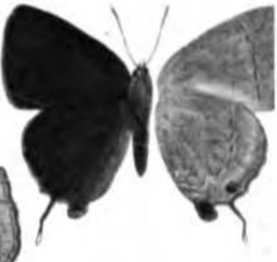

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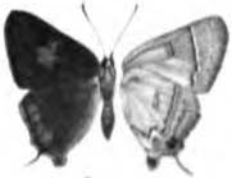

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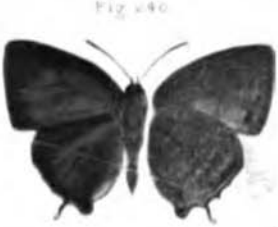

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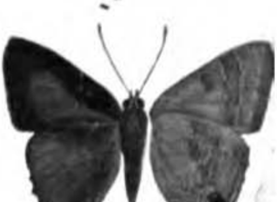

Fig. 238.